INVENTOR SEARCH

```
=> fil pascal biotechno wpix biosis dissabs lifesci esbio biotechds bioeng
scisearch;d que l126; fil capl; d que l35; fil medl; d que l66; fil embase; d que
197; dup rem l66,135,1126,197
FILE 'PASCAL' ENTERED AT 10:02:44 ON 30 NOV 2010
Any reproduction or dissemination in part or in full,
by means of any process and on any support whatsoever
is prohibited without the prior written agreement of INIST-CNRS.
COPYRIGHT (C) 2010 INIST-CNRS. All rights reserved.

FILE 'BIOTECHNO' ENTERED AT 10:02:44 ON 30 NOV 2010
COPYRIGHT (C) 2010 Elsevier Science B.V., Amsterdam. All rights reserved.

FILE 'WPIX' ENTERED AT 10:02:44 ON 30 NOV 2010
COPYRIGHT (C) 2010 THOMSON REUTERS

FILE 'BIOSIS' ENTERED AT 10:02:44 ON 30 NOV 2010
Copyright (c) 2010 The Thomson Corporation

FILE 'DISSABS' ENTERED AT 10:02:44 ON 30 NOV 2010
COPYRIGHT (C) 2010 ProQuest Information and Learning Company; All Rights Reserved.

FILE 'LIFESCI' ENTERED AT 10:02:44 ON 30 NOV 2010
COPYRIGHT (C) 2010 Cambridge Scientific Abstracts (CSA)

FILE 'ESBIOBASE' ENTERED AT 10:02:44 ON 30 NOV 2010
COPYRIGHT (C) 2010 Elsevier Science B.V., Amsterdam. All rights reserved.

FILE 'BIOTECHDS' ENTERED AT 10:02:44 ON 30 NOV 2010
COPYRIGHT (C) 2010 THOMSON REUTERS

FILE 'BIOENG' ENTERED AT 10:02:44 ON 30 NOV 2010
COPYRIGHT (C) 2010 Cambridge Scientific Abstracts (CSA)

FILE 'SCISEARCH' ENTERED AT 10:02:44 ON 30 NOV 2010
Copyright (c) 2010 The Thomson Corporation


L98        1063 SEA CURTISS R/AU OR CURTISS R III/AU OR CURTISS ROY?/AU
L99      249856 SEA SALMONELLA
L100          8 SEA ((ARACP OR ARA CP)(W) BAD OR ARACPBAD OR ARA CPBAD)
L101       1088 SEA FUR GENE#
L102       1719 SEA FERRIC UPTAKE REGULAT?
L103      13365 SEA O(W) ANTIGEN#
L104    2667600 SEA MUTAT? OR MUTANT#
L105        965 SEA MANNOSE(1A) PHOSPHATE ISOMERASE
L106       5259 SEA PMI OR ΔPMI OR DELTAPMI
L107         83 SEA PFUR? OR DELTAPFUR?
L108          4 SEA TTARA?
L109     751214 SEA ATTENUAT?
L115      89324 SEA OUTER MEMBRANE
L120     100416 SEA L99(W) TYPHIMURIUM
L126         29 SEA L98 AND L120 AND (L104 OR L109) AND (L100 OR L101 OR L102
                OR L103 OR L105 OR L106 OR L107 OR L108 OR L115)



FILE 'CAPLUS' ENTERED AT 10:02:44 ON 30 NOV 2010
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
```

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

FILE COVERS 1907 - 30 Nov 2010 VOL 153 ISS 23
FILE LAST UPDATED: 29 Nov 2010 (20101129/ED)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Aug 2010
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Aug 2010

CAplus now includes complete International Patent Classification (IPC)
reclassification data for the fourth quarter of 2010.

CAS Information Use Policies apply and are available at:

http://www.cas.org/legal/infopolicy.html

This file contains CAS Registry Numbers for easy and accurate
substance identification.
'OBI' IS DEFAULT SEARCH FIELD FOR 'CAPLUS' FILE

L2	252	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	CURTISS R/AU OR CURTISS R III/AU OR CURTISS RAY III/AU OR CURTISS ROY?/AU
L3	37998	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	SALMONELLA/CW
L4	3	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	((ARACP OR ARA CP)(W)BAD OR ARACPBAD OR ARA CPBAD)/BI
L5	708	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	GENE#/OBI(L)FUR/OBI OR (FUR GENE#)/BI
L7	51696	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	ATTENUAT?/OBI
L8	10	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	L3 AND L5 AND L7
L9	38618	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	LIPOPOLYSACCHARIDES/CT
L11	524	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	L9(L)SYNTHES?/OBI
L12	1	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	L11 AND L3 AND L5
L15	3376	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	O/OBI(L)ANTIGEN#/CW
L18	2	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	L15 AND L3 AND (L4 OR L5)
L19	3	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	L11 AND L15 AND L3
L21	6	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	L3 AND L7 AND L15 AND L9
L22	970	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	PMI/BI
L23	3	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	PFUR/BI
L28	328337	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	MUTAT?/OBI OR MUTANT#/OBI
L29	18181	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	L3(L)TYPHIMURIUM/OBI
L31	10	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	L22 AND L28 AND L29
L32	9	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	L22 AND L28 AND L29 AND L7
L33	1	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	L31 NOT L32
L35	12	SEA	FILE=CAPLUS	SPE=ON	ABB=ON	L2 AND (L4 OR L8 OR L12 OR L18 OR L19 OR L21 OR L23 OR L33)

FILE 'MEDLINE' ENTERED AT 10:02:44 ON 30 NOV 2010

FILE LAST UPDATED: 27 Nov 2010 (20101127/UP). FILE COVERS 1946 TO DATE.

MEDLINE and LMEDLINE have been updated with the 2010 Medical Subject Headings (MeSH) vocabulary and tree numbers from the U.S. National Library of Medicine (NLM). Additional information is available at

http://www.nlm.nih.gov/pubs/techbull/nd09/nd09_medline_data_changes_2010.html.

The Medline file has been reloaded effective January 24, 2010. See HELP RLOAD for details.

This file contains CAS Registry Numbers for easy and accurate substance identification.

See HELP RANGE before carrying out any RANGE search.

L36	248	SEA FILE=MEDLINE SPE=ON	ABB=ON	CURTISS R?/AU,AUTH
L37	48420	SEA FILE=MEDLINE SPE=ON	ABB=ON	SALMONELLA+NT/CT
L38	1	SEA FILE=MEDLINE SPE=ON	ABB=ON	((ARACP OR ARA CP)(W)BAD OR ARACPBAD OR ARA CPBAD)
L39	2584	SEA FILE=MEDLINE SPE=ON	ABB=ON	O ANTIGENS/CT
L40	7659	SEA FILE=MEDLINE SPE=ON	ABB=ON	VACCINES, ATTENUATED/CT
L41	491950	SEA FILE=MEDLINE SPE=ON	ABB=ON	MUTATION+NT/CT
L42	11848	SEA FILE=MEDLINE SPE=ON	ABB=ON	MUTANT PROTEINS+NT/CT
L43	154	SEA FILE=MEDLINE SPE=ON	ABB=ON	FUR GENE#
L44	958	SEA FILE=MEDLINE SPE=ON	ABB=ON	PMI OR ΔPMI
L45	2	SEA FILE=MEDLINE SPE=ON	ABB=ON	PFUR
L52	490	SEA FILE=MEDLINE SPE=ON	ABB=ON	FERRIC UPTAKE REGULATING PROTEINS, BACTERIAL/CN
L56	20666	SEA FILE=MEDLINE SPE=ON	ABB=ON	BACTERIAL OUTER MEMBRANE PROTEINS+NT/CT
L59	262	SEA FILE=MEDLINE SPE=ON	ABB=ON	MANNOSE-6-PHOSPHATE ISOMERASE/CT
L66	5	SEA FILE=MEDLINE SPE=ON	ABB=ON	L36 AND L37 AND (L40 OR L41 OR L42) AND (L38 OR L39 OR L43 OR L44 OR L45 OR L52 OR L56 OR L59)

FILE 'EMBASE' ENTERED AT 10:02:44 ON 30 NOV 2010

FILE COVERAGE: EMBASE-originated material 1947 to 26 Nov 2010 (20101126/ED)
Unique MEDLINE content 1948 to present

EMBASE is now updated daily. SDI frequency remains weekly (default) and biweekly.

This file contains CAS Registry Numbers for easy and accurate substance identification.

For further assistance, please contact your local helpdesk.

L67	19	SEA FILE=EMBASE SPE=ON	ABB=ON	CURTISS R?/AU
L68	67092	SEA FILE=EMBASE SPE=ON	ABB=ON	SALMONELLA+NT/CT
L70	367	SEA FILE=EMBASE SPE=ON	ABB=ON	FERRIC UPTAKE REGULAT?
L71	190	SEA FILE=EMBASE SPE=ON	ABB=ON	FUR GENE#

```
L72           41 SEA FILE=EMBASE SPE=ON  ABB=ON  FUR GENE/CT
L73          325 SEA FILE=EMBASE SPE=ON  ABB=ON  MANNOSE PHOSPHATE ISOMERASE/CT

L74         2711 SEA FILE=EMBASE SPE=ON  ABB=ON  O ANTIGEN/CT
L75         1095 SEA FILE=EMBASE SPE=ON  ABB=ON  PMI OR ΔPMI OR DELTAPMI
L76            4 SEA FILE=EMBASE SPE=ON  ABB=ON  PFUR
L77            3 SEA FILE=EMBASE SPE=ON  ABB=ON  TTARA?
L78        11332 SEA FILE=EMBASE SPE=ON  ABB=ON  LIVE VACCINE/CT
L79       189362 SEA FILE=EMBASE SPE=ON  ABB=ON  ATTENUAT?
L80       544225 SEA FILE=EMBASE SPE=ON  ABB=ON  MUTATION+NT/CT
L81        48065 SEA FILE=EMBASE SPE=ON  ABB=ON  MUTANT/CT OR BACTERIUM
                 MUTANT+NT/CT
L82        31722 SEA FILE=EMBASE SPE=ON  ABB=ON  MUTANT PROTEIN/CT
L83           25 SEA FILE=EMBASE SPE=ON  ABB=ON  PFUR?
L84            1 SEA FILE=EMBASE SPE=ON  ABB=ON  ((ARACP OR ARA CP)(W)BAD OR
                 ARACPBAD OR ARA CPBAD)
L97            9 SEA FILE=EMBASE SPE=ON  ABB=ON  L67 AND L68 AND (L70 OR L71 OR
                 L72 OR L73 OR L74 OR L75 OR L76 OR L77 OR L78 OR L79 OR L80 OR
                 L81 OR L82 OR L83 OR L84)


FILE 'MEDLINE' ENTERED AT 10:02:45 ON 30 NOV 2010

FILE 'CAPLUS' ENTERED AT 10:02:45 ON 30 NOV 2010
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2010 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'PASCAL' ENTERED AT 10:02:45 ON 30 NOV 2010
Any reproduction or dissemination in part or in full,
by means of any process and on any support whatsoever
is prohibited without the prior written agreement of INIST-CNRS.
COPYRIGHT (C) 2010 INIST-CNRS. All rights reserved.

FILE 'WPIX' ENTERED AT 10:02:45 ON 30 NOV 2010
COPYRIGHT (C) 2010 THOMSON REUTERS

FILE 'BIOSIS' ENTERED AT 10:02:45 ON 30 NOV 2010
Copyright (c) 2010 The Thomson Corporation

FILE 'LIFESCI' ENTERED AT 10:02:45 ON 30 NOV 2010
COPYRIGHT (C) 2010 Cambridge Scientific Abstracts (CSA)

FILE 'BIOTECHDS' ENTERED AT 10:02:45 ON 30 NOV 2010
COPYRIGHT (C) 2010 THOMSON REUTERS

FILE 'SCISEARCH' ENTERED AT 10:02:45 ON 30 NOV 2010
Copyright (c) 2010 The Thomson Corporation

FILE 'EMBASE' ENTERED AT 10:02:45 ON 30 NOV 2010
Copyright (c) 2010 Elsevier B.V. All rights reserved.
PROCESSING COMPLETED FOR L66
PROCESSING COMPLETED FOR L35
PROCESSING COMPLETED FOR L126
PROCESSING COMPLETED FOR L97
L128          39 DUP REM L66 L35 L126 L97 (16 DUPLICATES REMOVED)
                 ANSWERS '1-5' FROM FILE MEDLINE
                 ANSWERS '6-14' FROM FILE CAPLUS
                 ANSWER '15' FROM FILE PASCAL
```

ANSWER '16' FROM FILE WPIX
ANSWERS '17-27' FROM FILE BIOSIS
ANSWER '28' FROM FILE BIOTECHDS
ANSWERS '29-30' FROM FILE SCISEARCH
ANSWERS '31-39' FROM FILE EMBASE

=> d iall 1-5; d ibib abs hitind 6-14; d iall 15; d ifull 16; d iall 17-39

L128 ANSWER 1 OF 39 MEDLINE on STN DUPLICATE 1
ACCESSION NUMBER: 20097576222 MEDLINE Full-text
DOCUMENT NUMBER: PubMed ID: 19805538
TITLE: Regulated delayed expression of rfaH in an attenuated Salmonella enterica serovar typhimurium vaccine enhances immunogenicity of outer membrane proteins and a heterologous antigen.
AUTHOR: Kong Qingke; Liu Qing; Roland Kenneth L; Curtiss Roy 3rd
CORPORATE SOURCE: Center for Infectious Diseases and Vaccinology, The Biodesign Institute, Arizona State University, PO Box 875401, Tempe, Arizona 85287-5401, USA.
SOURCE: Infection and immunity, (2009 Dec) Vol. 77, No. 12, pp. 5572-82. Electronic Publication: 2009-10-05.
Journal code: 0246127. E-ISSN: 1098-5522. L-ISSN: 0019-9567.
Report No.: NLM-PMC2786485.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200912
ENTRY DATE: Entered STN: 17 Nov 2009
Last Updated on STN: 16 Dec 2009
Entered Medline: 4 Dec 2009

ABSTRACT:
RfaH is a transcriptional antiterminator that reduces the polarity of long operons encoding secreted and surface-associated cell components of Salmonella enterica serovar Typhimurium, including O antigen and lipopolysaccharide core sugars. A DeltarfaH mutant strain is attenuated in mice (50% lethal dose [LD(50)], >10(8) CFU). To examine the potential for using rfaH in conjunction with other attenuating mutations, we designed a series of strains in which we replaced the native rfaH promoter with the tightly regulated arabinose-dependent araC P(BAD) promoter so that rfaH expression was dependent on exogenously supplied arabinose provided during in vitro growth. Following colonization of host lymphoid tissues, where arabinose was not available, the P(BAD) promoter was no longer active and rfaH was not expressed. In the absence of RfaH, O antigen and core sugars were not synthesized. We constructed three mutant strains that expressed different levels of RfaH by altering the ribosome-binding sequence and start codon. One mutation, DeltaP(rfaH178), was introduced into the attenuated vaccine strain chi9241 (DeltapabA DeltapabB DeltaasdA) expressing the pneumococcal surface protein PspA from an Asd(+) balanced-lethal plasmid. Mice immunized with this strain and boosted 4 weeks later induced higher levels of serum immunoglobulin G specific for PspA and for outer membrane proteins from other enteric bacteria than either an isogenic DeltarfaH derivative or the isogenic RfaH(+) parent. Eight weeks after primary oral immunization, mice were challenged with 200 LD(50) of virulent Streptococcus pneumoniae WU2. Immunization with DeltaP(rfaH178) mutant strains led to increased levels of protection compared to that of the parent chi9241 and of a DeltarfaH derivative of chi9241.
CONTROLLED TERM: Check Tags: Female

Animals
Antibodies, Bacterial: BL, blood
Antigens, Heterophile: GE, genetics
*Antigens, Heterophile: IM, immunology
Arabinose: ME, metabolism
Bacterial Outer Membrane Proteins: GE, genetics
*Bacterial Outer Membrane Proteins: IM, immunology
*Bacterial Proteins: BI, biosynthesis
Bacterial Proteins: GE, genetics
Bacterial Proteins: IM, immunology
Gene Deletion
*Gene Expression Regulation, Bacterial
Immunization, Secondary: MT, methods
Immunoglobulin G: BL, blood
Mice
Mice, Inbred BALB C
Pneumococcal Infections: PC, prevention & control
Promoter Regions, Genetic
Salmonella Vaccines: GE, genetics
*Salmonella Vaccines: IM, immunology
Salmonella typhimurium: GE, genetics
*Salmonella typhimurium: IM, immunology
Streptococcus pneumoniae: IM, immunology
Survival Analysis
Transcriptional Activation
Vaccines, Attenuated: GE, genetics
Vaccines, Attenuated: IM, immunology

CAS REGISTRY NO.: 147-81-9 (Arabinose)
CHEMICAL NAME: 0 (Antibodies, Bacterial); 0 (Antigens, Heterophile); 0 (Bacterial Outer Membrane Proteins); 0 (Bacterial Proteins); 0 (Immunoglobulin G); 0 (Salmonella Vaccines); 0 (Vaccines, Attenuated); 0 (pneumococcal surface protein A)
MEDLINE REFERENCE COUNT: 44 There are 44 cited references available in MEDLINE for this document.

REFERENCE(S): CITED REFERENCES AVAILABLE IN MEDLINE

(1) Chatfield, S N; Parasitology. 1995, V110 Suppl, PS17-24. MEDLINE
(2) Hitchcock, P J; J Bacteriol. 1983 Apr, V154(1), P269-77. MEDLINE
(3) Curtiss, Roy, 3rd; J Clin Invest. 2002 Oct, V110(8), P1061-6. MEDLINE
(4) Briles, D E; Vaccine. 1996 Jun, V14(9), P858-67. MEDLINE
(5) Samuel, Gabrielle; Carbohydr Res. 2003 Nov 14, V338(23), P2503-19. MEDLINE
(6) BERTANI, G; J Bacteriol. 1951 Sep, V62(3), P293-300. MEDLINE
(7) Nagy, Gabor; Infect Immun. 2004 Jul, V72(7), P4297-301. MEDLINE
(8) Sambandamurthy, Vasan K; Microbes Infect. 2005 May, V7(5-6), P955-61. MEDLINE
(9) Atkins, Helen S; Vaccine. 2006 Apr 5, V24(15), P2710-7. MEDLINE
(10) Nagy, Gabor; Infect Immun. 2006 Oct, V74(10), P5914-25. MEDLINE
(11) Cheminay, Cedric; Int J Med Microbiol. 2008 Jan, V298(1-2), P87-98. MEDLINE
(12) Xin, Wei; Infect Immun. 2008 Jul, V76(7), P3241-54. MEDLINE
(13) Nagy, Gabor; Int J Med Microbiol. 2008 Jul, V298(5-6), P379-95. MEDLINE
(14) Sun, Wei; Appl Environ Microbiol. 2008 Jul, V74(13), P4241-5. MEDLINE
(15) Kong, Wei; Proc Natl Acad Sci U S A. 2008 Jul 8, V105(27), P9361-6. MEDLINE
(16) Li, Yuhua; Infect Immun. 2008 Nov, V76(11), P5238-46. MEDLINE
(17) Nagy, Gabor; J Infect Dis. 2008 Dec 1, V198(11), P1699-706. MEDLINE
(18) Curtiss, Roy, 3rd; Infect Immun. 2009 Mar, V77(3), P1071-82. MEDLINE
(19) Li, Yuhua; Proc Natl Acad Sci U S A. 2009 Jan 13, V106(2), P593-8. MEDLINE
(20) Bailey, M J; Mol Microbiol. 1997 Dec, V26(5), P845-51. MEDLINE
(21) Edwards, R A; Gene. 1998 Jan 30, V207(2), P149-57. MEDLINE

(22) Stocker, B A; J Gen Microbiol. 1980 Jan, V116(1), P17-24. MEDLINE
(23) Lindberg, A A; J Gen Microbiol. 1980 Jan, V116(1), P25-32. MEDLINE
(24) Valentine, P J; Infect Immun. 1998 Jul, V66(7), P3378-83. MEDLINE
(25) Nayak, A R; Infect Immun. 1998 Aug, V66(8), P3744-51. MEDLINE
(26) Roland, K; Avian Dis. 1999 Jul-Sep, V43(3), P429-41. MEDLINE
(27) Singh, S P; Microb Pathog. 2000 Mar, V28(3), P157-67. MEDLINE
(28) Toguchi, A; J Bacteriol. 2000 Nov, V182(22), P6308-21. MEDLINE
(29) Rojas, G; FEMS Microbiol Lett. 2001 Oct 16, V204(1), P123-8. MEDLINE
(30) Kang, Ho Young; Infect Immun. 2002 Apr, V70(4), P1739-49. MEDLINE
(31) Santangelo, Thomas J; Mol Cell. 2002 Apr, V9(4), P698-700. MEDLINE
(32) Artsimovitch, Irina; Cell. 2002 Apr 19, V109(2), P193-203. MEDLINE
(33) McDaniel, L S; Infect Immun. 1991 Jan, V59(1), P222-8. MEDLINE
(34) Collins, L V; Infect Immun. 1991 Mar, V59(3), P1079-85. MEDLINE
(35) Hassan, J O; Res Microbiol. 1990 Sep-Oct, V141(7-8), P839-50. MEDLINE
(36) Hone, D; J Infect Dis. 1987 Jul, V156(1), P167-74. MEDLINE
(37) Curtiss, R, 3rd; Infect Immun. 1987 Dec, V55(12), P3035-43. MEDLINE
(38) Hone, D M; Infect Immun. 1988 May, V56(5), P1326-33. MEDLINE
(39) Stocker, B A; Curr Top Microbiol Immunol. 1986, V124, P149-72. MEDLINE
(40) Schmieger, H; Mol Gen Genet. 1972, V119(1), P75-88. MEDLINE
(41) Neidhardt, F C; J Bacteriol. 1974 Sep, V119(3), P736-47. MEDLINE
(42) Germanier, R; Infect Immun. 1971 Dec, V4(6), P663-73. MEDLINE
(43) Sanderson, K E; J Bacteriol. 1981 May, V146(2), P535-41. MEDLINE
(44) Brown, Jeremy S; Proc Natl Acad Sci U S A. 2002 Dec 24, V99(26), P16969-74. MEDLINE

L128 ANSWER 2 OF 39 MEDLINE on STN DUPLICATE 2

ACCESSION NUMBER:	2009145883 MEDLINE Full-text
DOCUMENT NUMBER:	PubMed ID: 19103774
TITLE:	Salmonella enterica serovar typhimurium strains with regulated delayed attenuation in vivo.
AUTHOR:	Curtiss Roy 3rd; Wanda Soo-Young; Gunn Bronwyn M; Zhang Xin; Tinge Steven A; Ananthnarayan Vidya; Mo Hua; Wang Shifeng; Kong Wei
CORPORATE SOURCE:	Center for Infectious Diseases and Vaccinology, Biodesign Institute and School of Life Sciences, Arizona State University, Tempe, Arizona 85287-5401, USA. rcurtiss@asu.edu
CONTRACT NUMBER:	AI056289 (United States NIAID NIH HHS) AI24533 (United States NIAID NIH HHS) DE06669 (United States NIDCR NIH HHS)
SOURCE:	Infection and immunity, (2009 Mar) Vol. 77, No. 3, pp. 1071-82. Electronic Publication: 2008-12-22. Journal code: 0246127. E-ISSN: 1098-5522. L-ISSN: 0019-9567. Report No.: NLM-PMC2643627.
PUB. COUNTRY:	United States
DOCUMENT TYPE:	Journal; Article; (JOURNAL ARTICLE) (RESEARCH SUPPORT, N.I.H., EXTRAMURAL) (RESEARCH SUPPORT, NON-U.S. GOV'T) (RESEARCH SUPPORT, U.S. GOV'T, NON-P.H.S.)
LANGUAGE:	English
FILE SEGMENT:	Priority Journals
ENTRY MONTH:	200903
ENTRY DATE:	Entered STN: 24 Feb 2009 Last Updated on STN: 20 Mar 2009 Entered Medline: 19 Mar 2009

ABSTRACT:
Recombinant bacterial vaccines must be fully attenuated for animal or human hosts to avoid inducing disease symptoms while exhibiting a high degree of immunogenicity. Unfortunately, many well-studied means for attenuating

Salmonella render strains more susceptible to host defense stresses encountered following oral vaccination than wild-type virulent strains and/or impair their ability to effectively colonize the gut-associated and internal lymphoid tissues. This thus impairs the ability of recombinant vaccines to serve as factories to produce recombinant antigens to induce the desired protective immunity. To address these problems, we designed strains that display features of wild-type virulent strains of Salmonella at the time of immunization to enable strains first to effectively colonize lymphoid tissues and then to exhibit a regulated delayed attenuation in vivo to preclude inducing disease symptoms. We recently described one means to achieve this based on a reversible smooth-rough synthesis of lipopolysaccharide O antigen. We report here a second means to achieve regulated delayed attenuation in vivo that is based on the substitution of a tightly regulated araC P(BAD) cassette for the promoters of the fur, crp, phoPQ, and rpoS genes such that expression of these genes is dependent on arabinose provided during growth. Thus, following colonization of lymphoid tissues, the Fur, Crp, PhoPQ, and/or RpoS proteins cease to be synthesized due to the absence of arabinose such that attenuation is gradually manifest in vivo to preclude induction of diseases symptoms. Means for achieving regulated delayed attenuation can be combined with other mutations, which together may yield safe efficacious recombinant attenuated Salmonella vaccines.

CONTROLLED TERM: Check Tags: Female
Animals
Bacterial Outer Membrane Proteins: BI, biosynthesis
Bacterial Outer Membrane Proteins: GE, genetics
Bacterial Proteins: BI, biosynthesis
Bacterial Proteins: GE, genetics
Gene Expression
*Gene Expression Regulation, Bacterial: GE, genetics
Genes, araC: GE, genetics
Mice
Mice, Inbred BALB C
Mice, Inbred C57BL
Mutation
Phenotype
Promoter Regions, Genetic
Repressor Proteins: BI, biosynthesis
Repressor Proteins: GE, genetics
*Salmonella Vaccines: IM, immunology
*Salmonella typhimurium: GE, genetics
Salmonella typhimurium: IM, immunology
*Salmonella typhimurium: PY, pathogenicity
Sigma Factor: BI, biosynthesis
Sigma Factor: GE, genetics
Vaccines, Attenuated
Virulence

CHEMICAL NAME: 0 (Bacterial Outer Membrane Proteins); 0 (Bacterial Proteins); 0 (Omp2 protein, bacteria); 0 (PhoQ protein, Bacteria); 0 (Repressor Proteins); 0 (Salmonella Vaccines); 0 (Sigma Factor); 0 (Vaccines, Attenuated); 0 (ferric uptake regulating proteins, bacterial); 0 (sigma factor KatF protein, Bacteria)

MEDLINE REFERENCE COUNT: 73 There are 73 cited references available in MEDLINE for this document.

REFERENCE(S): CITED REFERENCES AVAILABLE IN MEDLINE

(1) Hengge-Aronis, R; Mol Microbiol. 1992 Jul, V6(14), P1877-86. MEDLINE
(2) Fang, F C; Proc Natl Acad Sci U S A. 1992 Dec 15, V89(24), P11978-82. MEDLINE

(3) de Jonge, R; J Appl Microbiol. 2003, V94(4), P625-32. MEDLINE
(4) Lee, Hin C; J Biol Chem. 2002 Nov 8, V277(45), P43527-35. MEDLINE
(5) Bang, Iel Soo; Mol Microbiol. 2002 Jun, V44(5), P1235-50. MEDLINE
(6) Prouty, Angela M; J Bacteriol. 2002 Mar, V184(5), P1270-6. MEDLINE
(7) Merrell, D Scott; Curr Opin Microbiol. 2002 Feb, V5(1), P51-5. MEDLINE
(8) Kang, Ho Young; J Bacteriol. 2002 Jan, V184(1), P307-12. MEDLINE
(9) Daigle, F; Mol Microbiol. 2001 Sep, V41(5), P1211-22. MEDLINE
(10) MacPherson, A J; Biochem J. 1981 Apr 15, V196(1), P269-83. MEDLINE
(11) Pueyo, C; Mutat Res. 1979 Aug, V64(4), P249-58. MEDLINE
(12) Bass, R; Arch Microbiol. 1976 Oct 11, V110(1), P135-43. MEDLINE
(13) Hogg, R W; J Supramol Struct. 1977, V6(3), P411-7. MEDLINE
(14) Stocker, B A; Proc R Soc Lond B Biol Sci. 1978 Jun 5, V202(1146), P5-30. MEDLINE
(15) Schmieger, H; Mol Gen Genet. 1972, V119(1), P75-88. MEDLINE
(16) Schmieger, H; Mol Gen Genet. 1976 Feb 2, V143(3), P307-9. MEDLINE
(17) Makela, P H; J Gen Microbiol. 1969 Aug, V57(3), Pvi. MEDLINE
(18) Peterson, Celeste N; J Bacteriol. 2004 Nov, V186(21), P7403-10. MEDLINE
(19) BERTANI, G; J Bacteriol. 1951 Sep, V62(3), P293-300. MEDLINE
(20) Roland, K; Avian Dis. 1999 Jul-Sep, V43(3), P429-41. MEDLINE
(21) Foster, J W; Curr Opin Microbiol. 1999 Apr, V2(2), P170-4. MEDLINE
(22) van Velkinburgh, J C; Infect Immun. 1999 Apr, V67(4), P1614-22. MEDLINE
(23) VanCott, J L; Nat Med. 1998 Nov, V4(11), P1247-52. MEDLINE
(24) Waterman, S R; Appl Environ Microbiol. 1998 Oct, V64(10), P3882-6. MEDLINE
(25) Bearson, B L; J Bacteriol. 1998 May, V180(9), P2409-17. MEDLINE
(26) Bearson, S; FEMS Microbiol Lett. 1997 Feb 15, V147(2), P173-80. MEDLINE
(27) Nardelli-Haefliger, D; Infect Immun. 1997 Aug, V65(8), P3328-36. MEDLINE
(28) Nickerson, C A; Infect Immun. 1997 May, V65(5), P1814-23. MEDLINE
(29) Waterman, S R; Mol Microbiol. 1996 Sep, V21(5), P925-40. MEDLINE
(30) Curtiss, R, 3rd; Vet Immunol Immunopathol. 1996 Nov, V54(1-4), P365-72. MEDLINE
(31) Bajaj, V; Mol Microbiol. 1996 Nov, V22(4), P703-14. MEDLINE
(32) Coynault, C; Mol Microbiol. 1996 Oct, V22(1), P149-60. MEDLINE
(33) Hall, H K; J Bacteriol. 1996 Oct, V178(19), P5683-91. MEDLINE
(34) Riesenberg-Wilmes, M R; Infect Immun. 1996 Apr, V64(4), P1085-92. MEDLINE
(35) Foster, J W; Annu Rev Microbiol. 1995, V49, P145-74. MEDLINE
(36) Lee, I S; Mol Microbiol. 1995 Jul, V17(1), P155-67. MEDLINE
(37) Chen, C Y; J Bacteriol. 1995 Sep, V177(18), P5303-9. MEDLINE
(38) Audia, J P; Int J Med Microbiol. 2001 May, V291(2), P97-106. MEDLINE
(39) Groisman, E A; J Bacteriol. 2001 Mar, V183(6), P1835-42. MEDLINE
(40) Prouty, A M; Infect Immun. 2000 Dec, V68(12), P6763-9. MEDLINE
(41) Gunn, J S; Microbes Infect. 2000 Jul, V2(8), P907-13. MEDLINE
(42) Wosten, M M; Cell. 2000 Sep 29, V103(1), P113-25. MEDLINE
(43) Pasetti, M F; Vaccine. 2000 Aug 1, V18(28), P3208-13. MEDLINE
(44) Bang, I S; J Bacteriol. 2000 Apr, V182(8), P2245-52. MEDLINE
(45) Kong, Wei; Proc Natl Acad Sci U S A. 2008 Jul 8, V105(27), P9361-6. MEDLINE
(46) Guzman, Carlos A; Vaccine. 2006 May 1, V24(18), P3804-11. MEDLINE
(47) CURTIS, S R, 3rd; J Bacteriol. 1965 Jan, V89, P28-40. MEDLINE
(48) Lange, R; Mol Microbiol. 1991 Jan, V5(1), P49-59. MEDLINE
(49) Lobell, R B; J Mol Biol. 1991 Mar 5, V218(1), P45-54. MEDLINE
(50) Mulvey, M R; J Bacteriol. 1990 Dec, V172(12), P6713-20. MEDLINE
(51) Galan, J E; Gene. 1990 Sep 28, V94(1), P29-35. MEDLINE
(52) Galan, J E; Proc Natl Acad Sci U S A. 1989 Aug, V86(16), P6383-7. MEDLINE
(53) Miller, V L; J Bacteriol. 1988 Jun, V170(6), P2575-83. MEDLINE
(54) Schwyn, B; Anal Biochem. 1987 Jan, V160(1), P47-56. MEDLINE
(55) Curtiss, R, 3rd; Infect Immun. 1987 Dec, V55(12), P3035-43. MEDLINE
(56) Romeo, T; J Bacteriol. 1989 May, V171(5), P2773-82. MEDLINE
(57) Loewen, P C; J Bacteriol. 1984 Nov, V160(2), P668-75. MEDLINE
(58) Gulig, P A; Infect Immun. 1987 Dec, V55(12), P2891-901. MEDLINE
(59) Martin, K; Proc Natl Acad Sci U S A. 1986 Jun, V83(11), P3654-8. MEDLINE

(60) Stocker, B A; Curr Top Microbiol Immunol. 1986, V124, P149-72. MEDLINE
(61) Ernst, R K; Infect Immun. 1990 Jun, V58(6), P2014-6. MEDLINE
(62) Tsai, C M; Anal Biochem. 1982 Jan 1, V119(1), P115-9. MEDLINE
(63) Hitchcock, P J; Eur J Biochem. 1983 Jul 1, V133(3), P685-8. MEDLINE
(64) Lee, N L; Proc Natl Acad Sci U S A. 1981 Feb, V78(2), P752-6. MEDLINE
(65) Hoiseth, S K; Nature. 1981 May 21, V291(5812), P238-9. MEDLINE
(66) Hopkins, S; Infect Immun. 1995 Sep, V63(9), P3279-86. MEDLINE
(67) Guzman, L M; J Bacteriol. 1995 Jul, V177(14), P4121-30. MEDLINE
(68) Buchmeier, N A; J Clin Invest. 1995 Mar, V95(3), P1047-53. MEDLINE
(69) Kowarz, L; J Bacteriol. 1994 Nov, V176(22), P6852-60. MEDLINE
(70) Groisman, E A; Proc Natl Acad Sci U S A. 1992 Dec 15, V89(24), P11939-43. MEDLINE
(71) Gulig, P A; Mol Microbiol. 1993 Mar, V7(6), P825-30. MEDLINE
(72) Lee, C A; Proc Natl Acad Sci U S A. 1992 Mar 1, V89(5), P1847-51. MEDLINE
(73) Norel, F; FEMS Microbiol Lett. 1992 Dec 1, V78(2-3), P271-6. MEDLINE

L128 ANSWER 3 OF 39 MEDLINE on STN DUPLICATE 4
ACCESSION NUMBER: 2007114809 MEDLINE Full-text
DOCUMENT NUMBER: PubMed ID: 17178790
TITLE: Role of RpoS in fine-tuning the synthesis of Vi capsular polysaccharide in Salmonella enterica serotype Typhi.
AUTHOR: Santander Javier; Wanda Soo-Young; Nickerson Cheryl A; Curtiss Roy 3rd
CORPORATE SOURCE: The Biodesign Institute, Center for Infectious Diseases and Vaccinology, Arizona State University, PO Box 875401, 1001 S. McAllister Avenue, Tempe, AZ 85287-5401, USA.
CONTRACT NUMBER: R01 AI056289 (United States NIAID NIH HHS)
R01 AI057885 (United States NIAID NIH HHS)
R01 AI24533 (United States NIAID NIH HHS)
SOURCE: Infection and immunity, (2007 Mar) Vol. 75, No. 3, pp. 1382-92. Electronic Publication: 2006-12-18.
Journal code: 0246127. ISSN: 0019-9567. L-ISSN: 0019-9567.
Report No.: NLM-PMC1828562.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, N.I.H., EXTRAMURAL)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200704
ENTRY DATE: Entered STN: 27 Feb 2007
Last Updated on STN: 11 Apr 2007
Entered Medline: 10 Apr 2007

ABSTRACT:
Regulation of the synthesis of Vi polysaccharide, a major virulence determinant in Salmonella enterica serotype Typhi, is under the control of two regulatory systems, ompR-envZ and rscB-rscC, which respond to changes in osmolarity. Some serotype Typhi strains exhibit overexpression of Vi polysaccharide, which masks clinical detection of lipopolysaccharide O antigen. This variation in Vi polysaccharide and O antigen display (VW variation) has been observed since the initial studies of serotype Typhi. In this study, we report that rpoS plays a role in this increased expression in Vi polysaccharide. We constructed a variety of isogenic serotype Typhi mutants that differed in their expression levels of RpoS and examined the role of the rpoS product in synthesis of Vi polysaccharide under different osmolarity conditions. Vi polysaccharide synthesis was also examined in serotype Typhi mutants in which the native promoter of the rpoS was replaced by an araCP(BAD)
cassette, so that the expression of rpoS was arabinose dependent. The RpoS(-) strains showed increased syntheses of Vi polysaccharide, which at low and medium osmolarities masked O antigen detection. In contrast, RpoS(+) strains

showed lower syntheses of Vi polysaccharide, and an increased detection of O antigen was observed. During exponential growth, when rpoS is unstable or present at low levels, serotype Typhi RpoS(+) strains overexpress the Vi polysaccharide at levels comparable to those for RpoS(-) strains. Our results show that RpoS is another regulator of Vi polysaccharide synthesis and contributes to VW variation in serotype Typhi, which has implications for the development of recombinant attenuated Salmonella vaccines in humans.

CONTROLLED TERM: *Bacterial Proteins: PH, physiology
Drug Design
O Antigens: ME, metabolism
*Polysaccharides, Bacterial: BI, biosynthesis
Polysaccharides, Bacterial: GE, genetics
Salmonella typhi: GE, genetics
Salmonella typhi: IM, immunology
*Salmonella typhi: ME, metabolism
*Sigma Factor: PH, physiology
Vaccines, Attenuated: CS, chemical synthesis
Vaccines, Attenuated: GE, genetics
Vaccines, Synthetic: CH, chemistry
Vaccines, Synthetic: GE, genetics

CHEMICAL NAME: 0 (Bacterial Proteins); 0 (O Antigens); 0 (Polysaccharides, Bacterial); 0 (Sigma Factor); 0 (Vaccines, Attenuated); 0 (Vaccines, Synthetic); 0 (capsular polysaccharide, Salmonella); 0 (sigma factor KatF protein, Bacteria)

MEDLINE REFERENCE COUNT: 67 There are 67 cited references available in MEDLINE for this document.

REFERENCE(S): CITED REFERENCES AVAILABLE IN MEDLINE

(1) Hirose, K; FEMS Microbiol Lett. 1997 Feb 15, V147(2), P259-65. MEDLINE
(2) Nickerson, C A; Infect Immun. 1997 May, V65(5), P1814-23. MEDLINE
(3) Edwards, R A; Gene. 1998 Jan 30, V207(2), P149-57. MEDLINE
(4) Kang, Ho Young; J Bacteriol. 2002 Jan, V184(1), P307-12. MEDLINE
(5) Hindle, Zoe; Infect Immun. 2002 Jul, V70(7), P3457-67. MEDLINE
(6) Curtiss, Roy, 3rd; J Clin Invest. 2002 Oct, V110(8), P1061-6. MEDLINE
(7) Robbe-Saule, Veronique; Appl Environ Microbiol. 2003 Aug, V69(8), P4352-8. MEDLINE
(8) LURIA, S E; J Bacteriol. 1957 Oct, V74(4), P461-76. MEDLINE
(9) GAINES, S; J Immunol. 1961 May, V86, P543-51. MEDLINE
(10) GAINES, S; Am J Hyg. 1961 Jul, V74, P60-6. MEDLINE
(11) TULLY, J G; Am J Hyg. 1961 Nov, V74, P259-66. MEDLINE
(12) TULLY, J G; J Bacteriol. 1962 Oct, V84, P747-53. MEDLINE
(13) Szu, Shousun Chen; Methods Enzymol. 2003, V363, P552-67. MEDLINE
(14) Fang, F C; Proc Natl Acad Sci U S A. 1992 Dec 15, V89(24), P11978-82. MEDLINE
(15) Norel, F; FEMS Microbiol Lett. 1992 Dec 1, V78(2-3), P271-6. MEDLINE
(16) Bueno, Susan M; J Bacteriol. 2004 May, V186(10), P3202-13. MEDLINE
(17) Houng, H S; J Bacteriol. 1992 Sep, V174(18), P5910-5. MEDLINE
(18) Raffatellu, Manuela; Infect Immun. 2005 Jun, V73(6), P3367-74. MEDLINE
(19) Hone, D M; J Clin Invest. 1992 Aug, V90(2), P412-20. MEDLINE
(20) Simanjuntak, C H; Lancet. 1991 Oct 26, V338(8774), P1055-9. MEDLINE
(21) Qadri, A; J Immunoassay. 1990, V11(2), P235-50. MEDLINE
(22) Tacket, C O; Infect Immun. 1992 Feb, V60(2), P536-41. MEDLINE
(23) Hone, D M; Vaccine. 1991 Nov, V9(11), P810-6. MEDLINE
(24) Sternberg, N L; Methods Enzymol. 1991, V204, P18-43. MEDLINE
(25) Black, R E; J Infect Dis. 1987 Jun, V155(6), P1260-5. MEDLINE
(26) Tsang, R S; FEMS Microbiol Immunol. 1989 Dec, V1(8-9), P437-41. MEDLINE
(27) Miller, V L; J Bacteriol. 1988 Jun, V170(6), P2575-83. MEDLINE
(28) Liu, S L; Infect Immun. 1988 Aug, V56(8), P1967-73. MEDLINE
(29) Gay, P; J Bacteriol. 1985 Nov, V164(2), P918-21. MEDLINE
(30) Gulig, P A; Infect Immun. 1987 Dec, V55(12), P2891-901. MEDLINE

(31) Schmieger, H; Mol Gen Genet. 1972, V119(1), P75-88. MEDLINE
(32) Old, D C; J Gen Microbiol. 1968 Apr, V51(1), P1-16. MEDLINE
(33) Hornick, R B; N Engl J Med. 1970 Oct 1, V283(14), P739-46. MEDLINE
(34) Tsai, C M; Anal Biochem. 1982 Jan 1, V119(1), P115-9. MEDLINE
(35) Hitchcock, P J; J Bacteriol. 1983 Apr, V154(1), P269-77. MEDLINE
(36) Robbins, J D; J Infect Dis. 1984 Sep, V150(3), P436-49. MEDLINE
(37) Kado, C I; J Bacteriol. 1981 Mar, V145(3), P1365-73. MEDLINE
(38) Wahdan, M H; J Infect Dis. 1982 Mar, V145(3), P292-5. MEDLINE
(39) Lesmana, M; Southeast Asian J Trop Med Public Health. 1980 Jun, V11(2), P302-7. MEDLINE
(40) Jesudason, M V; Diagn Microbiol Infect Dis. 1994 Feb, V18(2), P75-8. MEDLINE
(41) Pang, T; Trends Microbiol. 1998 Sep, V6(9), P339-42. MEDLINE
(42) Robbe-Saule, V; FEMS Microbiol Lett. 1999 Jan 1, V170(1), P141-3. MEDLINE
(43) Khan, A Q; FEMS Microbiol Lett. 1998 Apr 1, V161(1), P201-8. MEDLINE
(44) Weinstein, D L; Infect Immun. 1998 May, V66(5), P2310-8. MEDLINE
(45) Arricau, N; Mol Microbiol. 1998 Aug, V29(3), P835-50. MEDLINE
(46) Roland, K; Avian Dis. 1999 Jul-Sep, V43(3), P429-41. MEDLINE
(47) Levine, M M; Vaccine. 1999 Oct 1, V17 Suppl 2, PS22-7. MEDLINE
(48) DiPetrillo, M D; Vaccine. 1999 Oct 14, V18(5-6), P449-59. MEDLINE
(49) Dilts, D A; Vaccine. 2000 Feb 14, V18(15), P1473-84. MEDLINE
(50) Robbe-Saule, V; Mol Microbiol. 2001 Mar, V39(6), P1533-45. MEDLINE
(51) Zhao, L; Microbiol Immunol. 2001, V45(2), P149-58. MEDLINE
(52) Coynault, C; Microb Pathog. 1999 Jun, V26(6), P299-305. MEDLINE
(53) Robbe-Saule, V; FEMS Microbiol Lett. 1995 Feb 15, V126(2), P171-6. MEDLINE
(54) Loewen, P C; Annu Rev Microbiol. 1994, V48, P53-80. MEDLINE
(55) Buchmeier, N A; J Clin Invest. 1995 Mar, V95(3), P1047-53. MEDLINE
(56) Kowarz, L; J Bacteriol. 1994 Nov, V176(22), P6852-60. MEDLINE
(57) Pickard, D; Infect Immun. 1994 Sep, V62(9), P3984-93. MEDLINE
(58) Provence, D L; Infect Immun. 1994 Apr, V62(4), P1369-80. MEDLINE
(59) Hashimoto, Y; J Bacteriol. 1993 Jul, V175(14), P4456-65. MEDLINE
(60) Tartera, C; Infect Immun. 1993 Jul, V61(7), P3084-9. MEDLINE
(61) Orme, I M; Trends Microbiol. 1995 Oct, V3(10), P401-4. MEDLINE
(62) Virlogeux, I; Microbiology. 1995 Dec, V141 (Pt 12), P3039-47. MEDLINE
(63) Muffler, A; J Bacteriol. 1996 Mar, V178(6), P1607-13. MEDLINE
(64) Virlogeux, I; J Bacteriol. 1996 Mar, V178(6), P1691-8. MEDLINE
(65) Hohmann, E L; J Infect Dis. 1996 Jun, V173(6), P1408-14. MEDLINE
(66) Jishage, M; J Bacteriol. 1996 Sep, V178(18), P5447-51. MEDLINE
(67) Coynault, C; Mol Microbiol. 1996 Oct, V22(1), P149-60. MEDLINE

L128 ANSWER 4 OF 39 MEDLINE on STN

ACCESSION NUMBER:	1999386855 MEDLINE Full-text
DOCUMENT NUMBER:	PubMed ID: 10456909
TITLE:	Attenuation and immunogenicity of Deltacya Deltacrp derivatives of Salmonella choleraesuis in pigs.
AUTHOR:	Kennedy M J; Yancey R J Jr; Sanchez M S; Rzepkowski R A; Kelly S M; Curtiss R 3rd
CORPORATE SOURCE:	Animal Health Discovery Research, Veterinary Infectious Diseases Section, Pharmacia & Upjohn, Inc., Kalamazoo, Michigan 49001, USA.. Michael.J.Kennedy@am.pnu.com
SOURCE:	Infection and immunity, (1999 Sep) Vol. 67, No. 9, pp. 4628-36. Journal code: 0246127. ISSN: 0019-9567. L-ISSN: 0019-9567. Report No.: NLM-PMC96787.
PUB. COUNTRY:	United States
DOCUMENT TYPE:	Journal; Article; (JOURNAL ARTICLE)
LANGUAGE:	English
FILE SEGMENT:	Priority Journals
ENTRY MONTH:	199910
ENTRY DATE:	Entered STN: 14 Oct 1999

Last Updated on STN: 14 Oct 1999
Entered Medline: 5 Oct 1999

ABSTRACT:
Six different isogenic Deltacya Deltacrp derivatives of a strain of Salmonella choleraesuis var. kunzendorf-chi3246 virulent for pigs were constructed by transposon-mediated deletion mutagenesis. These strains were evaluated for virulence and ability to elicit a protective immune response in young weaned pigs after oral administration and were compared to a commercially available vaccine which lacks the 50-kb virulence plasmid (vpl(-)). These derivatives were Deltacya Deltacrp vpl(+), Deltacya Deltacrp vpl(-), Deltacya Delta(crp-cdt) vpl(+), Deltacya Delta(crp-cdt) vpl(-), Deltacya Deltacrp ***pmi*** -3834 vpl(+), and Deltacya Delta(crp-cdt) pmi-3834. In experiments to evaluate safety, no significant adverse effects of any of the vaccine constructs were observed, except that two of the strains which carried the virulence plasmid (vpl(+)) caused a small, short-term elevation in maximum temperature compared to pretreatment temperature values. Orally immunized animals, except for those vaccinated with the Deltacya Deltacrp pmi -3834 vpl(+) strain or SC-54, developed significant serum antibody responses 21 days postvaccination as measured by enzyme-linked immunosorbent assay. No cell-mediated immune responses to heat-killed S. choleraesuis were noted at the same time point as measured with heat-killed bacteria as antigen in a lymphocyte proliferation assay. In an oral challenge exposure model with a highly virulent heterologous strain of S. choleraesuis, the Deltacya Deltacrp strains with deletions in pmi were not protective. As measured by morbidity scores, the responses to challenge of the pigs vaccinated with the other four Deltacya Deltacrp derivatives were significantly better than those of the nonvaccinated, challenged group. With the exception of temperature elevation and slight differences in diarrhea scores postchallenge, none of these strains differed significantly from each other in the other clinical parameters analyzed. While the commercial vaccine was protective by most of the parameters measured, it was not fully protective against challenge with virulent S. choleraesuis as judged by diarrhea scores and temperature elevation. Collectively, these data demonstrate that Deltacya Deltacrp derivatives, with or without the virulence plasmid but not with deletions in the pmi gene, are candidates for vaccines for protection against salmonellosis in pigs.

CONTROLLED TERM: Check Tags: Female; Male
Animals
Antibodies, Bacterial: BL, blood
Antibodies, Bacterial: IM, immunology
Bacterial Vaccines: GE, genetics
*Bacterial Vaccines: IM, immunology
Carrier Proteins
Cyclic AMP: GE, genetics
*Cyclic AMP Receptor Protein: GE, genetics
Mutation
Salmonella: GE, genetics
*Salmonella: IM, immunology
Salmonella Infections: IM, immunology
Salmonella Infections: MI, microbiology
Salmonella Infections: PA, pathology
Salmonella Infections: PC, prevention & control
Swine
Vaccines, Attenuated
CAS REGISTRY NO.: 60-92-4 (Cyclic AMP)
CHEMICAL NAME: 0 (Antibodies, Bacterial); 0 (Bacterial Vaccines); 0 (Carrier Proteins); 0 (Cyclic AMP Receptor Protein); 0 (Vaccines, Attenuated)
MEDLINE REFERENCE COUNT: 39 There are 39 cited references available in MEDLINE for this document.

REFERENCE(S): CITED REFERENCES AVAILABLE IN MEDLINE
(1) Clarke, R C; Can J Vet Res. 1987 Jan, V51(1), P32-8. MEDLINE
(2) McFarland, W C; Microb Pathog. 1987 Aug, V3(2), P129-41. MEDLINE
(3) Nnalue, N A; Infect Immun. 1987 Apr, V55(4), P955-62. MEDLINE
(4) O'Callaghan, D; Infect Immun. 1988 Feb, V56(2), P419-23. MEDLINE
(5) Magaud, J P; J Immunol Methods. 1988 Jan 21, V106(1), P95-100. MEDLINE
(6) Gulig, P A; Infect Immun. 1987 Dec, V55(12), P2891-901. MEDLINE
(7) Curtiss, R, 3rd; Infect Immun. 1987 Dec, V55(12), P3035-43. MEDLINE
(8) Reed, W M; Am J Vet Res. 1986 Jan, V47(1), P75-83. MEDLINE
(9) Nnalue, N A; Infect Immun. 1986 Dec, V54(3), P635-40. MEDLINE
(10) Morehouse, L G; J Am Vet Med Assoc. 1972 Feb 15, V160(4), P593-601. MEDLINE
(11) Old, D C; J Gen Microbiol. 1968 Apr, V51(1), P1-16. MEDLINE
(12) Curtiss, R, 3rd; Genetics. 1968 Jan, V58(1), P9-54. MEDLINE
(13) Germanier, R; Infect Immun. 1971 Dec, V4(6), P663-73. MEDLINE
(14) Tsai, C M; Anal Biochem. 1982 Jan 1, V119(1), P115-9. MEDLINE
(15) Hitchcock, P J; J Bacteriol. 1983 Apr, V154(1), P269-77. MEDLINE
(16) Blaser, M J; J Infect Dis. 1981 May, V143(5), P743-6. MEDLINE
(17) Robertsson, J A; Infect Immun. 1983 Aug, V41(2), P742-50. MEDLINE
(18) Lindberg, A A; Infect Immun. 1983 Aug, V41(2), P751-7. MEDLINE
(19) Smith, B P; Am J Vet Res. 1984 Jan, V45(1), P59-66. MEDLINE
(20) Smith, B P; Am J Vet Res. 1984 Nov, V45(11), P2231-5. MEDLINE
(21) Maloy, S R; J Bacteriol. 1981 Feb, V145(2), P1110-1. MEDLINE
(22) Hoiseth, S K; Nature. 1981 May 21, V291(5812), P238-9. MEDLINE
(23) Jacks, T M; Antimicrob Agents Chemother. 1981 Apr, V19(4), P562-6. MEDLINE
(24) Slauch, J M; Methods Enzymol. 1994, V235, P481-92. MEDLINE
(25) Stabel, T J; Infect Immun. 1993 Feb, V61(2), P610-8. MEDLINE
(26) Matsui, K; Microbiol Immunol. 1992, V36(3), P269-78. MEDLINE
(27) Kelly, S M; Infect Immun. 1992 Nov, V60(11), P4881-90. MEDLINE
(28) Cardenas, L; Clin Microbiol Rev. 1992 Jul, V5(3), P328-42. MEDLINE
(29) Roof, M B; Am J Vet Res. 1992 Aug, V53(8), P1328-32. MEDLINE
(30) Roof, M B; Am J Vet Res. 1992 Aug, V53(8), P1333-6. MEDLINE
(31) Hohmann, A; Infect Immun. 1979 Jul, V25(1), P27-33. MEDLINE
(32) Kramer, T T; Am J Vet Res. 1992 Apr, V53(4), P444-8. MEDLINE
(33) Kantele, A; Vaccine. 1991 Jun, V9(6), P428-31. MEDLINE
(34) Alper, M D; J Bacteriol. 1978 Jan, V133(1), P149-57. MEDLINE
(35) Saier, M H, Jr; J Bacteriol. 1978 Apr, V134(1), P356-8. MEDLINE
(36) Hassan, J O; Res Microbiol. 1990 Sep-Oct, V141(7-8), P839-50. MEDLINE
(37) Galan, J E; Gene. 1990 Sep 28, V94(1), P29-35. MEDLINE
(38) Chatfield, S N; Vaccine. 1989 Dec, V7(6), P495-8. MEDLINE
(39) Hone, D; J Infect Dis. 1987 Jul, V156(1), P167-74. MEDLINE

L128 ANSWER 5 OF 39 MEDLINE on STN
ACCESSION NUMBER: 1998084503 MEDLINE Full-text
DOCUMENT NUMBER: PubMed ID: 9423887
TITLE: Virulence of a Salmonella typhimurium OmpD mutant.
AUTHOR: Meyer P N; Wilmes-Riesenberg M R; Stathopoulos C; Curtiss R 3rd
CORPORATE SOURCE: Department of Biology, Washington University, St. Louis, Missouri 63130, USA.
SOURCE: Infection and immunity, (1998 Jan) Vol. 66, No. 1, pp. 387-90.
Journal code: 0246127. ISSN: 0019-9567. L-ISSN: 0019-9567.
Report No.: NLM-PMC107915.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
(RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English

FILE SEGMENT: Priority Journals
ENTRY MONTH: 199801
ENTRY DATE: Entered STN: 6 Feb 1998
Last Updated on STN: 3 Mar 2000
Entered Medline: 27 Jan 1998

ABSTRACT:
An ompD mutation caused by a Tn10 insertion was transduced into Salmonella typhimurium SL1344 and UK-1. The adherence and invasion capabilities of the resultant ompD mutants were examined by tissue culture analysis. The virulence of the S. typhimurium ompD mutants was ascertained by a 50% lethal dose (LD50) study and by determining colonization ability with BALB/c mice. We found no statistically significant difference in adherence and invasion capacities between the S. typhimurium wild type strains and their corresponding ompD mutants. Furthermore, the LD50 and colonization studies revealed that there is no statistically significant difference in virulence between the S. typhimurium wild type strains and their corresponding ompD mutants. These results differ from those reported previously (C. J. Dorman, S. Chatfield, C. F. Higgins, C. Hayward, and G. Dougan, Infect. Immun. 57:2136-2140, 1989).

CONTROLLED TERM: Check Tags: Female
Animals
*Bacterial Outer Membrane Proteins: GE, genetics
Bacterial Outer Membrane Proteins: ME, metabolism
Cells, Cultured
DNA Transposable Elements
Mice
Mice, Inbred BALB C
Mutagenesis, Insertional
*Salmonella Infections, Animal: GE, genetics
Salmonella Infections, Animal: MI, microbiology
*Salmonella typhimurium: GE, genetics
*Salmonella typhimurium: PY, pathogenicity
Virulence: GE, genetics

CHEMICAL NAME: 0 (Bacterial Outer Membrane Proteins); 0 (DNA Transposable Elements)

MEDLINE REFERENCE COUNT: 17 There are 17 cited references available in MEDLINE for this document.

REFERENCE(S): CITED REFERENCES AVAILABLE IN MEDLINE

(1) Singh, S P; J Bacteriol. 1992 Mar, V174(6), P1965-73. MEDLINE
(2) Riesenberg-Wilmes, M R; Infect Immun. 1996 Apr, V64(4), P1085-92. MEDLINE
(3) LURIA, S E; J Bacteriol. 1957 Oct, V74(4), P461-76. MEDLINE
(4) HENLE, G; J Immunol. 1957 Jul, V79(1), P54-9. MEDLINE
(5) Chatfield, S N; Infect Immun. 1991 Jan, V59(1), P449-52. MEDLINE
(6) Dorman, C J; Infect Immun. 1989 Jul, V57(7), P2136-40. MEDLINE
(7) Galan, J E; Proc Natl Acad Sci U S A. 1989 Aug, V86(16), P6383-7. MEDLINE
(8) Nikaido, H; Microbiol Rev. 1985 Mar, V49(1), P1-32. MEDLINE
(9) St Louis, M E; JAMA. 1988 Apr 8, V259(14), P2103-7. MEDLINE
(10) Gulig, P A; Infect Immun. 1987 Dec, V55(12), P2891-901. MEDLINE
(11) Singh, S P; Microbiology. 1996 Nov, V142 (Pt 11), P3201-10. MEDLINE
(12) Curtiss, R, 3rd; Infect Immun. 1987 Dec, V55(12), P3035-43. MEDLINE
(13) Edelman, R; Rev Infect Dis. 1986 May-Jun, V8(3), P329-49. MEDLINE
(14) Lee, D R; J Bacteriol. 1980 Jun, V142(3), P1019-22. MEDLINE
(15) Collinson, S K; J Bacteriol. 1993 Jan, V175(1), P12-8. MEDLINE
(16) Anonymous; MMWR Morb Mortal Wkly Rep. 1996 Jan 12, V45(1), P1-3. MEDLINE
(17) LENNOX, E S; Virology. 1955 Jul, V1(2), P190-206. MEDLINE

ACCESSION NUMBER: 2002:575217 CAPLUS Full-text
DOCUMENT NUMBER: 137:137500
TITLE: Attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by an episomal wild-type gene
INVENTOR(S): Curtiss, Roy, III
PATENT ASSIGNEE(S): Washington University, USA
SOURCE: PCT Int. Appl., 86 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002059292	A2	20020801	WO 2001-US42527	20011005
WO 2002059292	A3	20030731		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 6872547	B1	20050329	US 2000-686499	20001011
AU 2002246498	A1	20020806	AU 2002-246498	20011005
EP 1349925	A2	20031008	EP 2001-994067	20011005
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				

PRIORITY APPLN. INFO.: US 2000-686499 A 20001011
WO 2001-US42527 W 20011005

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB A method of maintaining a foreign gene in a microbial population without the need for antibiotic selection and that can be used to attenuate pathogenic microorganisms for vaccine use is described. The methods use microbial host cells that have an inactivating mutation in an essential gene encoding an enzyme which catalyzes a step in the biosynthesis of diaminopimelic acid (DAP). Diaminopimelic acid is essential for cell wall biosynthesis and is not found free in mammals. The mutation therefore cannot be repaired by syntrophism. The cells also have an extrachromosomal vector that includes the complementing gene as a selectable marker and a gene of interest. The vector can integrate into the host cell at the gene carrying the mutation leading to the diaminopimelic acid auxotrophy. This stabilizes the foreign gene in the host. Expression of the complementing gene is kept to the min. compatible with survival of the host to maintain pressure that prevents excision of the transgene. The cells of the invention are particularly useful for the manufacture of antigens for use in vaccines, including DNA vaccines. A series of expts. with the asd gene of Salmonella typhimurium that demonstrate the practice of the invention are reported. IPCI C12N0015-00 [ICM,7]
IPCR A61K0039-00 [I,C*]; A61K0039-00 [I,A]; A61K0039-02 [I,C*]; A61K0039-02 [I,A]; A61K0039-112 [I,C*]; A61K0039-112 [I,A]; A61K0048-00 [I,C*]; A61K0048-00 [I,A]; C07K0014-195 [I,C*]; C07K0014-24 [I,A]; C12N0015-70 [I,C*]; C12N0015-70 [I,A]; C12N0015-74 [I,C*]; C12N0015-74 [I,A]
CC 10-4 (Microbial, Algal, and Fungal Biochemistry)
Section cross-reference(s): 15
ST attenuation mutation complementation transgene integration stabilization; cell wall biosynthesis mutation attenuation

vaccine
IT Animal virus
Eubacteria
Gamete and Germ cell
Parasite
(antigens of, manufacture in attenuated bacterial host; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(aro, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(aroA, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(aroC, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(asd, mutations in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Enterobacteriaceae
Pathogen
Virulence (microbial)
(attenuation of; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Egg
Sperm
(autoantigens of, manufacture in attenuated bacterial host; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Antigens
RL: BPN (Biosynthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(autoantigens, manufacture in attenuated bacterial host; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(cdt, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Salmonella typhimurium
(cell wall mutants and attenuation of; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL

(Biological study); USES (Uses)
(crp, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(cya, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(dam, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(dap, mutations in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(dapA, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(dapB, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(dapD, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(dapE, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(dapF, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Mutation
(deletion, for inactivation of essential genes; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(flgM, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of

cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Plasmid vectors
(for attenuation of bacteria; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(fur, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(galE, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(galU, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(hemA, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(hilA, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(htrA, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Mutation
(insertion, for inactivation of essential genes; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(inv, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Vaccines
(live, attenuation of microorganisms for; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)
IT Allergens
Antigens
Cytokines
Lymphokines

Tumor antigens
RL: BPN (Biosynthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(manufacture in attenuated bacterial host; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Cell wall
(mutations affecting biosynthesis of; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(mviA, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(nadA, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Promoter (genetic element)
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(of essential gene, minimizing function of, in attenuation of pathognic bacteria; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(ompR, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(pab, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(phoP, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(phoQ, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(pmi, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Gene, microbial

RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(pncB, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(poxA, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Cytomegalovirus
(promoters of, expression of therapeutic gene from; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(pur, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(recA, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(rfc, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(rpoE, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(rpsL, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(sirA, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(slyA, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(sodC, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(ssrA, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(tonB, as essential gene, attenuation by mutation in; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT Fungi
(zoopathogenic, antigens of, manufacture in attenuated bacterial host; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT 444272-82-6
RL: PRP (Properties)
(attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by an episomal wild-type gene)

IT 583-93-7, Diaminopimelic acid
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(mutations affecting biosynthesis of; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by episomal wild-type gene)

IT 444272-86-0, 4: PN: WO02059292 SEQID: 7 unclaimed DNA 444272-87-1, 5: PN: WO02059292 SEQID: 8 unclaimed DNA 444388-50-5, 1: PN: WO02059292 SEQID: 3 unclaimed DNA
RL: PRP (Properties)
(unclaimed nucleotide sequence; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by an episomal wild-type gene)

IT 444272-83-7 444272-84-8 444272-85-9
RL: PRP (Properties)
(unclaimed protein sequence; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by an episomal wild-type gene)

IT 444168-40-5 444272-81-5
RL: PRP (Properties)
(unclaimed sequence; attenuation of microorganisms for vaccines by generation of cell wall biosynthesis mutants complemented by an episomal wild-type gene)

OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L128 ANSWER 7 OF 39 CAPLUS COPYRIGHT 2010 ACS on STN DUPLICATE 7
ACCESSION NUMBER: 2002:293472 CAPLUS Full-text
DOCUMENT NUMBER: 136:324050
TITLE: Microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen
INVENTOR(S): Curtiss, Roy, III; Tinge, Steven A.
PATENT ASSIGNEE(S): Washington University, USA; Megan Health, Inc.

SOURCE: PCT Int. Appl., 91 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002030457	A2	20020418	WO 2001-US31606	20011011
WO 2002030457	A3	20030123		
WO 2002030457	A9	20030724		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2002011582	A	20020422	AU 2002-11582	20011011
CA 2463482	A1	20030418	CA 2001-2463482	20011011
EP 1326960	A2	20030716	EP 2001-979646	20011011
EP 1326960	B1	20041208		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
AT 284440	T	20041215	AT 2001-979646	20011011
PRIORITY APPLN. INFO.:			US 2000-689123 A	20001012
			WO 2001-US31606 W	20011011

AB Compns. comprising a microbe having an attenuating mutation comprising a recombinant transcription terminator insertion in a chromosomal gene are disclosed. The transcription terminator is rrnB 5s rRNA T1T2, trpA, T4 gene 32, T4 ipIII gene, or rrfG 5S rRNA. The chromosomal gene is pab, pur, aro, asd, dap, nadA, pncB, galE, pmi, fur, rpsL, ompR, htrA, hemA, cdt, cya, crp, phoP, rfc, poxR or galU gene. The microbe is Salmonella, Shigella, Escherichia or hybrid thereof. The compns. can be used as vaccines or carrier vehicles for delivering a desired protein to an individual. Also disclosed are methods for immunizing an individual and methods of delivering a desired gene product to an individual based upon administration of the compns.

IPCI A61K0039-02 [ICM,7]; A61K0039-108 [ICS,7]; A61K0039-112 [ICS,7]
IPCR A61K0039-00 [I,C*]; A61K0039-00 [I,A]; A61P0037-00 [I,C*]; A61P0037-02 [I,A]; C12N0015-74 [I,C*]; C12N0015-74 [I,A]
CC 15-2 (Immunochemistry)
Section cross-reference(s): 3, 10, 63
ST attenuated microbe transcription terminator vaccine carrier
IT Gene, microbial
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); BUU (Biological use, unclassified); BIOL (Biological study); PREP (Preparation); USES (Uses)
(32, transcription terminator; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT rRNA
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); BUU (Biological use, unclassified); BIOL (Biological study); PREP (Preparation); USES (Uses)
(5 S, rrnB s5 rRNA T1T2 transcription terminator; microbes attenuated by inserting a transcription terminator are useful

as vaccine or carrier for delivering a desired antigen)
IT Gamete and Germ cell
(antigen; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(aro; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(asd; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Antigens
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(autoantigens; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Drug delivery systems
(carriers; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(cdt; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(crp; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(cya; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(dap; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(deletion; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)

(fur; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(galE; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(galU; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT Antigens
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(gamete-specific; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT Coliphage T4
(gene 32 transcription terminator; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT Chromosome
(gene; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(hemA; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(htrA; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT Gene, microbial
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); BUU (Biological use, unclassified); BIOL (Biological study); PREP (Preparation); USES (Uses)
(ipII; transcription terminator; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT DNA sequences
Drug delivery systems
Escherichia
Escherichia coli
Eubacteria
Fungi
Immunostimulation
Immunosuppression
Microorganism
Molecular cloning
Mutation
Parasite

Pathogen
Protozoa
RNA sequences
Salmonella
Shigella
Vaccines
Virus
(microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT Promoter (genetic element)
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT Allergens
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(nadA; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(ompR; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(pab; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(phoP; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(phoQ; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(pmi; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(pncB; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(poxR; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(pur; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(rfc; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(rpsL; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Gene, microbial
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); BUU (Biological use, unclassified); BIOL (Biological study); PREP (Preparation); USES (Uses)
(rrfG 5S rRNA transcription terminator; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Operon
(rrnB, T1 or T2 transcription terminator; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Mutagenesis
(site-directed, deletion; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Mutagenesis
(site-directed, insertion; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Salmonella typhimurium
(strain MGN-1362, x8298 or x8429; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Genetic element
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); BIOL (Biological study); PREP (Preparation)
(terminator, transcription; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT Gene, microbial
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); BUU (Biological use, unclassified); BIOL (Biological study); PREP (Preparation); USES (Uses)
(trpA, transcription terminator; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)

IT 413009-57-1 413009-58-2 413009-59-3 413009-60-6 413009-61-7
413009-62-8 413009-63-9
RL: BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)
(nucleotide sequence; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT 413010-83-0 413010-84-1 413010-85-2 413010-86-3 413010-87-4
413010-88-5 413010-89-6 413010-90-9 413010-91-0 413010-92-1
413010-93-2 413010-94-3 413010-95-4 413010-96-5 413010-97-6
413010-98-7 413010-99-8
RL: PRP (Properties)
(unclaimed nucleotide sequence; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
IT 144095-73-8
RL: PRP (Properties)
(unclaimed sequence; microbes attenuated by inserting a transcription terminator are useful as vaccine or carrier for delivering a desired antigen)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)
REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L128 ANSWER 8 OF 39 CAPLUS COPYRIGHT 2010 ACS on STN DUPLICATE 8
ACCESSION NUMBER: 1999:343671 CAPLUS Full-text
DOCUMENT NUMBER: 130:351225
TITLE: Recombinant vaccines comprising immunogenic attenuated bacteria having rpos positive phenotype
INVENTOR(S): Curtiss, Roy, III; Nickerson, Cheryl A.
PATENT ASSIGNEE(S): Washington University, USA
SOURCE: PCT Int. Appl., 163 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9925387	A1	19990527	WO 1998-US24295	19981113
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6024961	A	20000215	US 1997-970789	19971114
CA 2309925	A1	19990527	CA 1998-2309925	19981113
CA 2309925	C	20100601		
AU 9914595	A	19990607	AU 1999-14595	19981113
AU 736242	B2	20010726		
EP 1030690	A1	20000830	EP 1998-958581	19981113
EP 1030690	B1	20020703		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				

JP 2001523649	T	20011127	JP 2000-520820		19981113
AT 219948	T	20020715	AT 1998-958581		19981113
ES 2181306	T3	20030216	ES 1998-958581		19981113
PRIORITY APPLN. INFO.:			US 1997-970789	A2	19971114
			WO 1998-US24295	W	19981113

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB Attenuated immunogenic bacteria having an RpoS+ phenotype, in particular, Salmonella enterica serotype typhi having an RpoS+ phenotype and methods therefor are disclosed. The Salmonella have in addition to an RpoS+ phenotype an inactivating mutation in one or more genes which render the microbe attenuated, and a recombinant gene capable of expressing a desired protein. The Salmonella are attenuated and have high immunogenicity so that they can be used in vaccines and as delivery vehicles for genes and gene products. Also disclosed are methods for preparing the vaccine delivery vehicles. Described were vaccines containing the disclosed Salmonella delivery vehicle and hepatitis B nucleocapsid pre-S1 pre-S2 particles, interleukin 2, sperm-specific antigen ZP-3 (as contraceptive vaccine), NALT, BALT, CALT, GALT proteins, and others. IPCI A61K0048-00 [ICM,6]; C12N0001-22 [ICS,6]; A61K0039-112 [ICS,6]

IPCR C12N0015-09 [I,C*]; C12N0015-09 [I,A]; A61K0035-66 [I,C*]; A61K0035-74 [I,A]; A61K0038-17 [I,C*]; A61K0038-17 [I,A]; A61K0038-19 [I,C*]; A61K0038-19 [I,A]; A61K0039-112 [I,C*]; A61K0039-112 [I,A]; A61K0039-12 [I,C*]; A61K0039-12 [I,A]; A61K0039-29 [I,C*]; A61K0039-29 [I,A]; A61K0039-35 [I,C*]; A61K0039-35 [I,A]; A61K0048-00 [I,C*]; A61K0048-00 [I,A]; A61P0031-00 [I,C*]; A61P0031-00 [I,A]; A61P0031-04 [I,A]; C12N0001-21 [I,C*]; C12N0001-21 [I,A]; C12N0001-22 [I,C*]; C12N0001-22 [I,A]

CC 15-2 (Immunochemistry)
Section cross-reference(s): 3, 63

ST vaccine antigen delivery Salmonella RpoS gene; gene product delivery attenuated Salmonella RpoS

IT Sialoglycoproteins
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(ZP3 (zona pellucida, 3); recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(aro; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(asd; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Antigens
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(autoantigens; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Drug delivery systems
(carriers; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(cdt; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Vaccines

(contraceptive; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(crp; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(cya; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(dap; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Proteins, general, biological studies
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(foreign; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(fur; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(galE; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(galU; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Immunomodulators
Immunostimulants
Immunosuppressants
(gene product; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(hemA; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Antigens
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(hepatitis B surface, pre-S1 protein; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(htrA; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial

RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(nadA; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Virion structure
(nucleocapsid, hepatitis B; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(ompR; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(pab; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(phoP; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(phoQ; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(pmi; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(pncB; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(poxR; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene
RL: BPN (Biosynthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(product; recombinant vaccines comprising immunogenic attenuated bacteria having rpos pos. phenotype)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(recombinant vaccines comprising immunogenic attenuated bacteria having RpoS pos. phenotype)

IT Bacteria (Eubacteria)
Drug delivery systems
Escherichia coli
Fungi
Gene therapy
Hepatitis B virus
Microorganism
Mutation

```
      Parasite
      Pathogen
      Protozoa
        Salmonella
        Salmonella choleraesuis
        Salmonella dublin
        Salmonella enterica
        Salmonella enteritidis
        Salmonella hirschfeldii
        Salmonella paratyphi-A
        Salmonella schottmuelleri
        Salmonella typhi
        Salmonella typhimurium
      Shigella
      Vaccines
      Virus
         (recombinant vaccines comprising immunogenic attenuated
         bacteria having rpos pos. phenotype)
IT    Gene, microbial
      Interleukin 2
      RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified);
      THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES
      (Uses)
         (recombinant vaccines comprising immunogenic attenuated
         bacteria having rpos pos. phenotype)
IT    Allergens
      RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL
      (Biological study); USES (Uses)
         (recombinant vaccines comprising immunogenic attenuated
         bacteria having rpos pos. phenotype)
IT    Gene, microbial
      RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL
      (Biological study); USES (Uses)
         (rfc; recombinant vaccines comprising immunogenic attenuated
         bacteria having rpos pos. phenotype)
IT    Gene, microbial
      RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified);
      THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES
      (Uses)
         (rpoS; recombinant vaccines comprising immunogenic attenuated
         bacteria having rpos pos. phenotype)
IT    Gene, microbial
      RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL
      (Biological study); USES (Uses)
         (rpsL; recombinant vaccines comprising immunogenic attenuated
         bacteria having rpos pos. phenotype)
IT    Gamete and Germ cell
      Sperm
         (specific antigen; recombinant vaccines comprising immunogenic
         attenuated bacteria having rpos pos. phenotype)
IT    DNA
      RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified);
      THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES
      (Uses)
         (vaccine; recombinant vaccines comprising immunogenic
         attenuated bacteria having rpos pos. phenotype)
IT    Contraceptives
         (vaccines; recombinant vaccines comprising immunogenic
         attenuated bacteria having rpos pos. phenotype)
OS.CITING REF COUNT:     1     THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD
```

(1 CITINGS)
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L128 ANSWER 9 OF 39 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2010:499281 CAPLUS Full-text
DOCUMENT NUMBER: 152:499391
TITLE: Recombinant Salmonella typhi expressing Streptococcus pneumoniae antigen as vaccine against Streptococcus pneumoniae infection
INVENTOR(S): Curtiss, Roy., III; Santander-Morales, Javier; Wanda, Soo-Young; Wang, Shifeng; Brenneman, Karen; Shi, Huoying; Xin, Wei; Kong, Qingke
PATENT ASSIGNEE(S): Arizona State University, USA
SOURCE: PCT Int. Appl., 255pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2010045620	A1	20100422	WO 2009-US61100	20091016
W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				

PRIORITY APPLN. INFO.: US 2008-106367P P 20081017

AB The invention encompasses a recombinant bacterium capable of eliciting an immune response against Streptococcus pneumoniae, a vaccine comprising the bacterium, and methods of using the bacterium. IPCI A61K0039-02 [I,A]
IPCR A61K0039-02 [I,C]; A61K0039-02 [I,A]
CC 15-2 (Immunochemistry)
Section cross-reference(s): 3, 10, 63
IT Cytolysis
(attenuated; recombinant Salmonella typhi expressing Streptococcus pneumoniae antigen as vaccine against Streptococcus pneumoniae infection)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(fur; recombinant Salmonella typhi expressing Streptococcus pneumoniae antigen as vaccine against Streptococcus pneumoniae infection)
IT DNA sequences
Molecular cloning
Mutagenesis
Protein sequences
Salmonella typhi
Streptococcus pneumoniae
Vaccines

(recombinant Salmonella typhi expressing Streptococcus pneumoniae antigen as vaccine against Streptococcus pneumoniae infection)
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L128 ANSWER 10 OF 39 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2009:237843 CAPLUS Full-text
DOCUMENT NUMBER: 150:230569
TITLE: Bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase the antigenicity of antigens and safety as live vaccines
INVENTOR(S): Curtiss, Roy, III; Wang, Shifeng; Wanda, Soo-Young; Kong, Wei
PATENT ASSIGNEE(S): Arizona State University, USA; Washington University
SOURCE: PCT Int. Appl., 191 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2009025888	A2	20090226	WO 2008-US63293	20080509
WO 2009025888	A3	20090416		
W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AP, EA, EP, OA				
EP 2150616	A2	20100210	EP 2008-827622	20080509
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LI, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, AL, BA, MK, RS				
US 20100124558	A1	20100520	US 2009-615872	20091110
PRIORITY APPLN. INFO.:			US 2007-917313P P	20070510
			WO 2008-US63293 W	20080509

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
AB Methods of constructing bacterial strains for use as live vaccines with improved retention of the antigen genes and lowered antigenicity and virulence are described. These strains have the gene for the antigen under the control of a repressor encoded by a gene integrated into the bacterial chromosome. Virulence genes necessary to allow the vaccine strain to colonize lymphoid tissue are also placed under the control of a foreign promoter. This allows the expression of the gene to allow the bacterium to colonize lymphoid tissue. The gene is then repressed to prevent the progression to either a disease sate or provocation of an immune response to the cell. The development of an arabinose-regulated system for use in Salmonella enterica serovar Typhimurium is demonstrated. Escherichia coli transcription factors and repressors were stable and functional in a Salmonella host. The bacteria are attenuated in mice and mice vaccinated with them resisted challenge with a virulent S. enterica serovar Typhimurium.
IPCI C12N0001-21 [I,A]; C12N0015-00 [I,C]; C12N0015-00 [I,A]

IPCR C12N0015-00 [I,C]; C12N0015-00 [I,A]
CC 3-2 (Biochemical Genetics)
Section cross-reference(s): 15
ST live vaccine safety antigen attenuation regulated expression
IT Promoter (genetic element)
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(PBAD, antigen gene expression from; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(araC, arabinose-regulated promoter of; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Promoter (genetic element)
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(arabinose-regulated, lacI gene expression from; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Transcription factors
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(cI repressor, in regulated expression systems; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Gene, microbial
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(crp, regulated expression in attenuated vaccine strains; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Gene, microbial
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(fur, regulated expression in attenuated vaccine strains; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Transcription factors
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(gene cII, in regulated expression systems; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Lymphatic system
(gut-associated, vaccine strain colonization of; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Gene, microbial
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(lacI, in regulated expression systems; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)

IT Transcription factors
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(lactose repressors, in regulated expression systems; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Salmonella paratyphi
Salmonella typhi
Streptococcus pneumoniae
(live vaccines against; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Immunity
(live vaccines for induction of; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Vaccines
(live; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Synthetic gene
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(microbial, lacI, in regulated expression systems; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Gene, microbial
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(murA, regulated expression in attenuated vaccine strains; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Gene, microbial
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(ompR, regulated expression in attenuated vaccine strains; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Gene, microbial
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(phoPQ, regulated expression in attenuated vaccine strains; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Gene, microbial
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(pspA, regulated expression in vaccine strains; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Virulence (microbial)
(regulation in vaccine strains of; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)

IT Genetic element
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(ribosome-binding site, in antigen expression cassette; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Gene, microbial
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(rpoS, regulated expression in attenuated vaccine strains; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Genetic element
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(signal sequence, in antigen expression cassette; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Gene, microbial
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(synthetic, lacI, in regulated expression systems; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Promoter (genetic element)
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(trc, antigen gene expression from; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Salmonella
Salmonella enterica typhimurium
(vaccine host; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT Lymphatic system
(vaccine strain colonization of; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT 58-86-6, Xylose, biological studies 69-79-4, Maltose 147-81-9, Arabinose 3615-41-6, Rhamnose
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(in regulation of antigen gene expression; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase antigenicity and safety as live vaccines)
IT 1116164-23-8 1116164-24-9 1116164-25-0 1116164-26-1 1116164-27-2
1116164-28-3 1116164-30-7 1116164-31-8 1116164-32-9 1116164-33-0
1116164-34-1 1116164-36-3 1116164-37-4 1116164-38-5 1116164-39-6
1116164-40-9 1116164-41-0 1116164-42-1 1116164-43-2 1116164-44-3
1116164-45-4 1116164-46-5 1116164-47-6 1116164-48-7 1116164-49-8
1116164-50-1 1116164-51-2 1116164-52-3 1116164-53-4 1116164-54-5
1116164-55-6 1116164-56-7 1116164-57-8 1116164-58-9 1116164-59-0
1116164-60-3 1116164-61-4 1116164-62-5 1116164-63-6 1116164-64-7
1116164-65-8 1116164-66-9 1116164-67-0 1116164-68-1 1116164-69-2
RL: PRP (Properties)

(unclaimed nucleotide sequence; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase the antigenicity of antigens and safety as live vaccines)

IT 1115861-88-5 1115861-89-6 1116164-29-4 1116164-35-2
RL: PRP (Properties)
(unclaimed protein sequence; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase the antigenicity of antigens and safety as live vaccines)

IT 1116164-70-5 1116164-71-6 1116164-72-7 1116164-73-8 1116164-74-9
1116164-75-0 1116164-76-1 1116164-77-2 1116164-78-3 1116164-79-4
1116164-80-7 1116164-81-8 1116164-82-9 1116164-83-0 1116164-84-1
1116164-85-2 1116164-86-3 1116164-87-4 1116164-88-5 1116164-89-6
1116164-90-9 1116164-91-0 1116164-92-1 1116164-93-2 1116164-94-3
1116164-95-4 1116164-96-5
RL: PRP (Properties)
(unclaimed sequence; bacterial expression hosts with regulated synthesis of antigens and regulated attenuation to increase the antigenicity of antigens and safety as live vaccines)

L128 ANSWER 11 OF 39 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2004:203985 CAPLUS Full-text
DOCUMENT NUMBER: 140:248226
TITLE: Use of microorganisms that can be externally induced to lyse for the delivery of vaccine vectors and antigens to animal cells
INVENTOR(S): Curtiss, Roy, III; Kong, Wei
PATENT ASSIGNEE(S): Washington University, USA
SOURCE: PCT Int. Appl., 201 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004020643	A2	20040311	WO 2003-US26883	20030829
WO 2004020643	A3	20040408		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2003278729	A1	20040319	AU 2003-278729	20030829
EP 1537214	A2	20050608	EP 2003-770256	20030829
EP 1537214	B1	20060301		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
AT 318916	T	20060315	AT 2003-770256	20030829
US 20060140975	A1	20060629	US 2005-526365	20051115
PRIORITY APPLN. INFO.:			US 2002-407522P P	20020901
			WO 2003-US26883 W	20030829

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
AB Host/vector systems for delivery of antigens and eukaryotic expression constructs, especially vector vaccines, to animals using microorganisms is

described. The method uses a microorganism that is modified so that it can be induced to lyse by an external signal to release the antigen or vectors close to target cells. This allows use of hosts that will target a preferred cell type. Preferably, lysis is introduced by blocking expression of a gene essential for cell wall biosynthesis. The gene may be under control of a chemical regulated promoter that allows the host to grow normally in culture. When the cells are administered to a host, the expression of the essential gene stops and lysis occurs when the gene product has become too diluted by cell division to sustain cell wall biosynthesis. Development of strains of Salmonella typhimurium carrying the asd gene for semialdehyde dehydrogenase under control of an arabinose-regulated promoter is demonstrated. The cells were also modified to block the synthesis of cholanic acid and lipid A; to alter the expression of the sifA gene; to block the synthesis and utilization of D-alanine; block flagellum biosynthesis and to prevent premature termination of protein synthesis. These steps improve safety of the host cell. The cells were constructed using balanced-lethal suicide systems to avoid the use of antibiotic resistance markers. IPCI C12N0015-85 [ICM,7]; A61K0039-00 [ICS,7]

IPCR A61K0039-00 [I,C*]; A61K0039-00 [I,A]; A61K0039-002 [I,C*]; A61K0039-012 [I,A]; A61K0039-015 [I,A]; A61K0039-04 [I,C*]; A61K0039-04 [I,A]; A61K0039-09 [I,C*]; A61K0039-09 [I,A]; A61K0039-29 [I,C*]; A61K0039-29 [I,A]; C12N0001-21 [I,C*]; C12N0001-21 [I,A]; C12N0015-74 [I,C*]; C12N0015-74 [I,A]

CC 3-2 (Biochemical Genetics)
Section cross-reference(s): 10, 15, 63

IT Promoter (genetic element)
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(araCPBAD, expression of essential genes from; use of microorganisms that can be externally induced to lyse for delivery of vaccine vectors and antigens to animal cells)

OS.CITING REF COUNT: 6 THERE ARE 6 CAPLUS RECORDS THAT CITE THIS RECORD (6 CITINGS)

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L128 ANSWER 12 OF 39 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2002:345842 CAPLUS Full-text
DOCUMENT NUMBER: 136:354186
TITLE: Recombinant vaccines comprising attenuated Salmonella having Rpos+ phenotype encoding a desired antigen
INVENTOR(S): Curtiss, Roy, III; Nickerson, Cheryl A.
PATENT ASSIGNEE(S): Washington University, USA
SOURCE: U.S., 50 pp., Cont.-in-part of U.S. 6,024,961. CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6383496	B1	20020507	US 1999-314062	19990518
US 6024961	A	20000215	US 1997-970789	19971114
ES 2181306	T3	20030216	ES 1998-958581	19981113
US 20030031683	A1	20030213	US 2002-138239	20020503
US 7083794	B2	20060801		
PRIORITY APPLN. INFO.:			US 1997-970789	A2 19971114
			US 1999-314062	A1 19990518

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB Attenuated immunogenic bacteria having an RpoS+ phenotype, in particular, Salmonella enterica serotype Typhi having an RpoS+ phenotype and methods therefor are disclosed. The Salmonella have in addition to an RpoS+ phenotype, an inactivating mutation in one or more genes which render the microbe attenuated, and a recombinant gene capable of expressing a desired protein. The inactivated/mutated genes are selected from pab, pur, aro, asd, dap, nadA, pncB, balE, pmi, fur, rpsL, ompR, htrA, hemA, cdt, cya, crp, dam, phoP, phoQ, rfe, poxA, galU, metL, metH, mviA, sodC recA, ssrA, ssrB , sirA, sirB, sirC, inv, hilA, hilC, hilD, rpoE, flgM, tonB and slyA gene. The Salmonella are attenuated and have high immunogenicity so that they can be used in vaccines and as delivery vehicles for genes and gene products. Also disclosed are methods for preparing the vaccine delivery vehicles.

INCL 424200100

IPCI A61K0039-02 [ICM,7]; A61K0048-00 [ICS,7]; C12N0015-74 [ICS,7]; C12N0001-21 [ICS,7]

IPCR C12N0015-09 [I,C*]; C12N0015-09 [I,A]; A61K0035-66 [I,C*]; A61K0035-74 [I,A]; A61K0038-17 [I,C*]; A61K0038-17 [I,A]; A61K0038-19 [I,C*]; A61K0038-19 [I,A]; A61K0039-112 [I,C*]; A61K0039-112 [I,A]; A61K0039-12 [I,C*]; A61K0039-12 [I,A]; A61K0039-29 [I,C*]; A61K0039-29 [I,A]; A61K0039-35 [I,C*]; A61K0039-35 [I,A]; A61K0048-00 [I,C*]; A61K0048-00 [I,A]; A61P0031-00 [I,C*]; A61P0031-00 [I,A]; A61P0031-04 [I,A]; C12N0001-21 [I,C*]; C12N0001-21 [I,A]; C12N0001-22 [I,C*]; C12N0001-22 [I,A]

NCL 424/200.100; 424/093.200; 424/258.100; 435/252.300; 435/252.800; 435/471.000; 435/897.000

CC 15-2 (Immunochemistry)
Section cross-reference(s): 2, 3, 10, 63

ST attenuated Salmonella Rpos pos phenotyp vaccine delivery

IT Salmonella enterica
(Choleraesuis serotype; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)

IT Gene, microbial
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(Rpos; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)

IT Eubacteria
Phenotypes
(Rpos+; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)

IT Gamete and Germ cell
(antigen; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)

IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(aro; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)

IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(asd; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)

IT Antigens
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(autoantigens; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)

IT Organic compounds, biological studies
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(biol., immunoregulatory; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Drug delivery systems
(carriers; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(cdt; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Drug delivery systems
(conjunctival; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(crp; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(cya; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(dam; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(dap; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(flgM; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(fur; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(galE; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(galU; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Antigens
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL

(Biological study); USES (Uses)
(gamete-specific; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Lymphatic system
(gut-associated, vaccine delivery; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(hemA; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(hilA; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(hilC; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(hilD; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(htrA; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(inv; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Bronchi
Nose
(lymphoid tissue vaccine delivery; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(metH; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(metL; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Immunomodulators
(mols.; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Drug delivery systems
(mucosal; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL

(Biological study); PROC (Process)
(mviA; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(nadA; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Drug delivery systems
(nasal; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(ompR; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Drug delivery systems
(oral; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(pab; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(phoP; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(phoQ; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(pmi; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(pncB; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(poxA; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(pur; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(recA; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)

IT Autoimmune disease
Drug delivery systems
Escherichia coli
Eubacteria
Fungi
Genetic vectors
Infection
Molecular cloning
Mutagenesis
Parasite
Pathogen
Protozoa
Salmonella
Salmonella enterica dublin
Salmonella enterica enteritidis
Salmonella enterica typhimurium
Salmonella hirschfeldii
Salmonella paratyphi
Salmonella paratyphi-A
Salmonella schottmuelleri
Salmonella typhi
Shigella
Vaccines
Virus
(recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Allergens
Antigens
DNA
Enzymes, biological studies
Glycolipids
Glycoproteins
Hormones, animal, biological studies
Lipoproteins
Nucleic acids
Peptides, biological studies
Polynucleotides
Polysaccharides, biological studies
Proteins
RNA
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Drug delivery systems
(rectal; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(rfe; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(rpoE; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Transcription factors
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL

(Biological study); USES (Uses)
(rpoS; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(rpsL; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(sirA; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(sirB; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(sirC; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(slyA; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(sodC; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(ssrA; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(ssrB; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Gene, microbial
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
(tonB; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
IT Lymphatic system
(vaccine delivery; recombinant vaccines comprise attenuated Salmonella having Rpos+ phenotype expressing a desired antigen)
OS.CITING REF COUNT: 6 THERE ARE 6 CAPLUS RECORDS THAT CITE THIS RECORD (6 CITINGS)
REFERENCE COUNT: 40 THERE ARE 40 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L128 ANSWER 13 OF 39 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2001:816942 CAPLUS Full-text
DOCUMENT NUMBER: 135:353768
TITLE: Regulated antigen delivery system (RADS) for live

bacterial vaccines
INVENTOR(S): Curtiss, Roy, III; Tinge, Steven A.
PATENT ASSIGNEE(S): Washington University, USA; Megan Health, Inc.
SOURCE: PCT Int. Appl., 95 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001083785	A2	20011108	WO 2001-US13915	20010430
WO 2001083785	A3	20020613		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6780405	B1	20040824	US 2000-560539	20000428
CA 2407709	A1	20011108	CA 2001-2407709	20010430
EP 1292687	A2	20030319	EP 2001-944119	20010430
EP 1292687	B1	20060816		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
HU 2003000793	A2	20030728	HU 2003-793	20010430
NZ 522433	A	20040430	NZ 2001-522433	20010430
JP 2004515210	T	20040527	JP 2001-580392	20010430
BR 2001010408	A	20040622	BR 2001-10408	20010430
AT 336584	T	20060915	AT 2001-944119	20010430
ES 2271031	T3	20070416	ES 2001-944119	20010430
MX 2002010690	A	20040730	MX 2002-10690	20021028
IN 2002DN01086	A	20100305	IN 2002-DN1086	20021101
ZA 2002009267	A	20040212	ZA 2002-9267	20021114
US 20040137003	A1	20040715	US 2004-258931	20040112
US 20050106176	A1	20050519	US 2004-924574	20040824
US 7341860	B2	20080311		

PRIORITY APPLN. INFO.: US 2000-560539 A1 20000428
WO 2001-US13915 W 20010430
ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB We describe a regulated antigen delivery system (RADS) that has (a) a vector that includes (1) a gene encoding a desired gene product operably linked to a control sequence, (2) an origin of replication conferring vector replication using DNA polymerase III, and (3) an origin of replication conferring vector replication using DNA polymerase I, where the second origin of replication is operably linked to a control sequence that is repressible by a repressor. The RADS microorganism also has a gene encoding a repressor, operably linked to an activatible control sequence. The RADS described provide high levels of the desired gene product after repression of the high copy number origin of replication is lifted. The RADS are particularly useful as live bacterial vaccines. Also described is a delayed RADS system, in which there is a delay before the high copy number origin is expressed after the repression is lifted. The delayed RADS is also particularly useful for live bacterial vaccines. Also described are several control elements useful for these systems, as well as methods for providing immunity to a pathogen in a vertebrate immunized with the RADS microorganisms. The invention claims bacterial host strains, attenuated pathogenic bacteria such as Salmonella, which have

chromosomal deletions and insertions for maintenance of plasmid RAVs (runaway vectors). DNA constructs for the bacterial host strains are diagrammed. The invention further claims an RAV pMEG-771 for arabinose-regulated runaway expression and describes several derivs. PMEG-771 contains the pSC101 ori, the pUC ori downstream from the P22 PR promoter, genes repA and asd, and a multi-cloning site between the promoter Ptrc and the transcription terminator 5S T1T2. As examples of the invention, Erysipelothrix rhusiopathiae 65 kD surface antigen (Ery65) and Streptococcus equi M protein (SeM) were cloned in RAVs to produce pMEG-525 and pMEG-573 resp. Salmonella typhimurium and S. choleraesuis transformed with pMEG-525 showed an increase in plasmid copy number and Ery65 protein expression after transfer from culture medium with arabinose to medium without arabinose and after continued incubation without arabinose the bacteria become inviable. Mice immunized with the S. typhimurium recombinant strain containing pMEG-525 produced a strong antibody response to Ery65 antigen and were protected against a LD of E. rhusiopathiae. S. typhimurium pMEG-573 SeM vaccine strains produced a serum IgG SeM-specific immune response in mice and horses and also an IgA response in horses.
IPCI C12N0015-63 [ICM,7]; C12N0015-74 [ICS,7]; C12N0001-21 [ICS,7]; A61K0039-00 [ICS,7]; A61K0045-00 [ICS,7]
IPCR C12N0015-09 [I,C*]; C12N0015-09 [I,A]; A61K0039-00 [I,C*]; A61K0039-00 [I,A]; A61K0039-112 [I,C*]; A61K0039-112 [I,A]; A61P0037-00 [I,C*]; A61P0037-04 [I,A]; C12N0001-21 [I,C*]; C12N0001-21 [I,A]; C12N0015-63 [I,C*]; C12N0015-63 [I,A]; C12N0015-74 [I,C*]; C12N0015-74 [I,A]; C12P0021-02 [I,C*]; C12P0021-02 [I,A]; C12R0001-42 [N,A]
CC 3-2 (Biochemical Genetics)
Section cross-reference(s): 6, 10, 15, 63
IT Promoter (genetic element)
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(araCPBAD; regulated antigen delivery system (RADS) for live bacterial vaccines)
IT Gene targeting
(gene knockin, araCPBAD-repressor gene; regulated antigen delivery system (RADS) for live bacterial vaccines)
OS.CITING REF COUNT: 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD (4 CITINGS)
REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L128 ANSWER 14 OF 39 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 1991:469825 CAPLUS Full-text
DOCUMENT NUMBER: 115:69825
ORIGINAL REFERENCE NO.: 115:12050h,12051a
TITLE: Cross-protective Salmonella vaccines using multiply mutant S. typhimurium
INVENTOR(S): Curtiss, Roy, III; Munson, Maryann
PATENT ASSIGNEE(S): Washington University, USA
SOURCE: PCT Int. Appl., 64 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9106317	A1	19910516	WO 1990-US6503	19901102
W: AU, CA, JP				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, NL, SE				
CA 2072633	A1	19910504	CA 1990-2072633	19901102

AU 9067371 A 19910531 AU 1990-67371 19901102
EP 500699 A1 19920902 EP 1990-917076 19901102
EP 500699 B1 19980610
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE
JP 05504331 T 19930708 JP 1990-515888 19901102
AT 167061 T 19980615 AT 1990-917076 19901102
PRIORITY APPLN. INFO.: US 1989-431597 A 19891103
WO 1990-US6503 A 19901102

AB Attenuated Salmonella for use as live vaccines against Salmonella and other Gram-neg. bacteria are prepared The organisms are incapable of manufacturing the lipopolysaccharide involved in pathogenesis because of mutation in several genes involved in the synthesis of, or regulation of synthesis of, the lipopolysaccharide. Other genes involved in the regulation of pathogenesis-related genes are also inactivated. A S. typhimurium with the crp and cya genes deleted was prepared by transposon mutagenesis with Tn10. S. typhimurium carrying both deletions had an LD50 of >109 colony-forming units (CFU) in Leghorn chicks, vs. 2 + 104 - 2 + 105 for wild-types. Similar deletions of the phoP, fur, pmi, and galE genes were constructed. Some of the constructs prepared were found to confer cross-resistance to S. enteriditis and pathogenic Escherichia coli.

IPCI A61K0039-112 [ICM,5]

IPCR A61K0039-02 [I,C*]; A61K0039-02 [I,A]; A61K0039-112 [I,C*]; A61K0039-112 [I,A]; A61P0031-00 [I,C*]; A61P0031-04 [I,A]; C12N0001-21 [I,C*]; C12N0001-21 [I,A]; C12N0015-09 [I,C*]; C12N0015-09 [I,A]; C12R0001-42 [N,A]

CC 15-2 (Immunochemistry)
Section cross-reference(s): 10

IT Vaccines
(Gram-neg. bacteria, cross-protective attenuated Salmonella for use in)

IT Salmonella
Salmonella typhimurium
(attenuated, for live cross-protective vaccine against Gram-neg. bacteria)

IT Receptors
RL: PREP (Preparation)
(for cAMP, gene for, of Salmonella typhimurium, deletion of, in preparation of live attenuated strains for vaccines cross-protective against Gram-neg. bacteria)

IT Escherichia coli
Salmonella enteritidis
(live vaccines against, attenuated Salmonella typhimurium for use in)

IT Lipopolysaccharides
RL: RCT (Reactant); RACT (Reactant or reagent)
(Salmonella deficient in synthesis of, for use in live cross-protective vaccine against Gram-neg. bacteria)

IT Gene and Genetic element, microbial
RL: PREP (Preparation)
(fur, deletion from Salmonella genome of, for preparation of attenuated strains for live cross-protective vaccines against Gram-neg. bacteria)

IT Gene and Genetic element, microbial
RL: PREP (Preparation)
(galE, deletion from Salmonella genome of, for preparation of attenuated strains for live cross-protective vaccines against Gram-neg. bacteria)

IT Gene and Genetic element, microbial
RL: PREP (Preparation)
(phoP, deletion from Salmonella genome of, for preparation of attenuated strains for live cross-protective vaccines against

Gram-neg. bacteria)
IT Gene and Genetic element, microbial
RL: PREP (Preparation)
(pmi, deletion from Salmonella genome of, for preparation of attenuated strains for live cross-protective vaccines against Gram-neg. bacteria)
IT Bacteria
(gram-neg., live vaccines against, attenuated Salmonella typhimurium for use in)
IT Gene and Genetic element, microbial
RL: PREP (Preparation)
(crp, deletion from Salmonella genome of, for preparation of attenuated strains for live cross-protective vaccines against Gram-neg. bacteria)
IT Gene and Genetic element, microbial
RL: PREP (Preparation)
(cya, deletion from Salmonella genome of, for preparation of attenuated strains for live cross-protective vaccines against Gram-neg. bacteria)
IT 9012-42-4, Adenylate cyclase
RL: BIOL (Biological study)
(gene for, of Salmonella typhimurium, deletion of, in preparation of live attenuated strains for vaccines cross-protective against Gram-neg. bacteria)
IT 60-92-4
RL: BIOL (Biological study)
(receptor for, gene for, of Salmonella typhimurium, deletion of, in preparation of live attenuated strains for vaccines cross-protective against Gram-neg. bacteria)
OS.CITING REF COUNT: 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD (4 CITINGS)

L128 ANSWER 15 OF 39 PASCAL COPYRIGHT 2010 INIST-CNRS. ALL RIGHTS RESERVED. on STN
ACCESSION NUMBER: 2002-0329482 PASCAL Full-text
COPYRIGHT NOTICE: Copyright .COPYRGT. 2002 INIST-CNRS. All rights reserved.
TITLE (IN ENGLISH): Immune responses to recombinant pneumococcal PspA antigen delivered by live attenuated Salmonella enterica serovar Typhimurium vaccine
AUTHOR: HO YOUNG KANG; SRINIVASAN Jay; CURTISS Roy III
CORPORATE SOURCE: Department of Biology, Washington University, St. Louis, Missouri 63130, United States
SOURCE: Infection and immunity, (2002), 70(4), 1739-1749, 59 refs.
ISSN: 0019-9567 CODEN: INFIBR
DOCUMENT TYPE: Journal
BIBLIOGRAPHIC LEVEL: Analytic
COUNTRY: United States
LANGUAGE: English
AVAILABILITY: INIST-15757, 354000100447180080
ABSTRACT: Attenuated Salmonella enterica serovar Typhimurium expressing recombinant antigens from other pathogens elicits primarily a Th1-type dominant immune response to both recombinant and Salmonella antigens. The immunogenicity and appropriate subcellular location of the recombinant antigen in the Salmonella vaccine strain may contribute to augmenting immune responses by facilitating adequate exposure of recombinant antigen to antigen-presenting cells for

processing. To allow for secretion from gram-negative bacteria and overexpression of antigen, a DNA fragment encoding a highly antigenic α-helical region of PspA (pneumococcal surface protein A) was subcloned downstream from the β-lactamase signal sequence in the multicopy Asd.sup.+ pYA3493 vector to create pYA3494. pYA3493 was derived from a class of Asd.sup.+ vectors with reduced expression of Asd to minimize selective disadvantage and enhance immunization of expressed recombinant antigens. The S. enterica serovar Typhimurium vaccine strain was constructed by the introduction of deletion mutations Δcrp-28 and ΔasdA16. Approximately 50% of the recombinant PspA (rPspA) expressed in a Salmonella strain harboring pYA3494 was detected in the combined supernatant and periplasmic fractions of broth-grown recombinant Salmonella. After a single oral immunization in BALB/c mice with 10.sup.9 CFU of the recombinant Salmonella vaccine strain carrying pYA3494, immunoglobulin G (IgG) antibody responses were stimulated to both the heterologous antigen rPspA and Salmonella lipopolysaccharide (LPS) and outer membrane proteins (OMPs). About half, and even more at later times after immunization, of the antibodies induced to rPspA were IgG 1 (indicating a Th2-type response), whereas 60 to 70% of the antibodies to LPS and 80 to 90% of those to OMPs were IgG2a (indicating a Th1-type response). A sublethal infection with Streptococcus pneumoniae WU2 boosted PspA antibody levels and maintained IgG2a/IgG1 ratios similar to those seen before the challenge. Oral immunization with Salmonella-PspA vaccine protected 60% of immunized mice from death after intraperitoneal challenge with 50 times the 50% lethal dose of virulent S. pneumoniae WU2. CLASSIFICATION CODE: 002A05B12; Life sciences; Biological sciences;

Microbiology; Bacteriology; Immunology, Pharmacology
002A05B10; Life sciences; Biological sciences; Microbiology; Bacteriology

CONTROLLED TERM: Streptococcus pneumoniae; Salmonella typhimurium; Mouse; Streptococcus A; Immune response; Antigen; Vaccine; Th1 lymphocyte; T-Lymphocyte; Immunogenicity; Vaccine strain; Accessory cell; Salmonellosis; Streptococcal infection; Antigenicity; Membrane protein; Secretion; Gram negative bacteria

BROADER TERM: Streptococcaceae; Micrococcales; Bacteria; Enterobacteriaceae; Rodentia; Mammalia; Vertebrata; Bacteriosis; Infection; Helper cell; Abnormal chromosome; Chromosomal aberration

L128 ANSWER 16 OF 39 WPIX COPYRIGHT 2010 THOMSON REUTERS on STN
DUPLICATE 5
ACCESSION NUMBER: 2004-042484 [200404] WPIX
DOC. NO. CPI: C2004-017411 [200404]
TITLE: New live attenuated derivative of a pathogenic Enterobacteriaceae species, useful as a vaccine for inducing cross protective immunity against infections caused by various Enterobacteriaceae strains or serotypes
DERWENT CLASS: B04; C06; D16
INVENTOR: CURTISS R
PATENT ASSIGNEE: (UNIW-C) UNIV WASHINGTON; (UNIW-C) UNIV WASHINGTON OFFICE TECHNOLOGY MANAGE; (CURT-I) CURTISS R
COUNTRY COUNT: 102

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC

WO 2003096812	A1	20031127 (200404)*	EN	133[45]
AU 2003235457	A1	20031202 (200442)	EN	
EP 1499191	A1	20050126 (200508)	EN	
US 20060233829	A1	20061019 (200670)	EN	
AU 2003235457	B2	20090212 (200951)	EN	

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2003096812	A1	WO 2003-US11802	20030415
US 20060233829	A1 Provisional	US 2002-372616P	20020415
US 20060233829	A1 Provisional	US 2002-373626P	20020418
AU 2003235457	A1	AU 2003-235457	20030415
EP 1499191	A1	EP 2003-721711	20030415
EP 1499191	A1	WO 2003-US11802	20030415
US 20060233829	A1	WO 2003-US11802	20030415
US 20060233829	A1	US 2005-511616	20051115
AU 2003235457	B2	AU 2003-235457	20030415

FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2003235457	A1 Based on	WO 2003096812 A
EP 1499191	A1 Based on	WO 2003096812 A
AU 2003235457	B2 Based on	WO 2003096812 A

PRIORITY APPLN. INFO: US 2002-373626P 20020418
US 2002-372616P 20020415
US 2005-511616 20051115
US 2002-372616P 20020415
US 2002-373626P 20020418

INT. PATENT CLASSIF.:
IPC ORIGINAL: A61K0039-02 [I,A]; C12N0001-21 [I,A]; C12N0015-74 [I,A]; A61K0039-02 [I,C]; A61K0039-112 [I,A]; A61K0039-112 [I,C] ; C12N0001-36 [I,A]; C12N0001-36 [I,C]
IPC RECLASSIF.: A61K0039-02 [I,A]; A61K0039-02 [I,C]; A61K0039-112 [I,A]; A61K0039-112 [I,C]; C12N0001-36 [I,A]; C12N0001-36 [I,C]
ECLA: A61K0039-02T1; A61K0039-02T3; C07K0014-255; C12N0001-36; C12N0015-74
ICO: K61K0039:52B
USCLASS NCLM: 424/200.100
NCLS: 435/252.300; 435/471.000

BASIC ABSTRACT:

WO 2003096812 A1 UPAB: 20090811

NOVELTY - A live attenuated derivative of a pathogenic Enterobacteriaceae species having enhanced ability to induce cross protective immunity against Enterobacteriaceae, is new.

DETAILED DESCRIPTION - A live attenuated derivative of a pathogenic Enterobacteriaceae species having enhanced ability to induce cross protective immunity against Enterobacteriaceae, comprising: (a) a means for regulatable expression of a gene encoding a regulatory protein, the expression of which in vivo causes synthesis of antigenic proteins that are conserved among Enterobacteriaceae; and (b) a means for regulatable synthesis of a second antigen, which ceases to be synthesized in vivo, exposing a carbohydrate antigen that is conserved among Enterobacteriaceae. INDEPENDENT CLAIMS are also included for: (1) a method for inducing a (cross-protective) immune

response sufficient for protection against infection by Enterobacteriaceae species, comprising administering live attenuated derivative defined above; (2) a vaccine comprising a live attenuated strain of Salmonella having enhanced ability to stimulate cross protective immunity against Enterobacteriaceae, consisting essentially of: (a) a mutation in a pmi gene that renders the pmi gene non functional; and (b) a genetic construction that allows for regulatable expression of a fur gene; and (3) a recombinant bacterial strain consisting essentially of a means of regulatable expression of a virulence gene, where the regulatable expression of a virulence gene renders the bacterial strain attenuated while maintaining immunogenicity. ACTIVITY - Antibacterial; Immunostimulant. Experimental protocols are described but no results are given. MECHANISM OF ACTION - Vaccine.

USE - The live attenuated derivatives are useful as vaccines for inducing high level immune response and/or cross protective immune response to protect individuals from infection from a diversity of species or serotypes of bacterial pathogens. TECHNOLOGY FOCUS:

BIOTECHNOLOGY - Preferred Derivative: The means of regulatable expression comprises substituting the promoter of the gene encoding a regulatory protein with a regulatable promoter. The regulatable promoter is the araCP BAD repressor-activator-promoter system. The carbohydrate antigen is an LPS O-antigen. The means for regulatable synthesis comprises a mutation in a gene that encodes a product necessary for synthesis of LPS O-antigen in the pmi gene. Specifically, the live attenuated derivative of a pathogenic Enterobacteriaceae species consists essentially of a means for regulatable expression of a fur gene, and a mutation that renders a pmi gene inoperable, where the means for regulatable expression of a ferric uptake regulator (fur) gene comprises substituting the fur promoter with a regulatable promoter or with araCP-BAD activator-repressor-promoter system. The means comprises the DELTAPfur223::araCP-BAD genetic construction. The mutation that renders a pmi gene inoperable is preferably a deletion mutation. Alternatively, the attenuated derivative consists of a means for regulatable expression of a first surface antigen which is conserved among Enterobacteriaceae, and a means for regulatable expression of a second surface antigen, which is not conserved among Enterobacteriaceae, where up regulation of the first surface antigen and down regulation of the second surface antigen results in enhanced ability of the attenuated derivative to produce immunity against Enterobacteriaceae.

Preferred Method: Inducing an immune response to Enterobacteriaceae comprises administering to an individual a live attenuated derivative of a pathogenic Enterobacteriaceae capable of colonizing the intestinal tract, and reaching and persisting in the gut associated lymphoid tissue, where expression of at least one conserved surface antigen is up regulated and at least one non-conserved surface antigen is down regulated in the attenuated derivative when the attenuated derivative is in the lymphoid tissue of the individual.

EXTENSION ABSTRACT:

ADMINISTRATION - The derivatives may be administered orally, by gastric intubation, or as aerosols. No dosage given. EXAMPLE - A 1881-bp Salmonella typhimurium DNA sequence encompassing the pmi gene was PCR amplified from the S. typhimurium UK xi3761 chromosome. Specific oligonucleotides were designed to amplify the 298-bp sequence 5' to the ATG start codon of the pmi gene to

yield the N-flanking fragment, and the 301-bp sequence 3' to the TAG stop codon of the pmi gene to obtain the C-flanking fragment. The N- and C-flanking fragments were then digested with EcoRI, ligated, and digested to completion with KniI and SacI, and cloned into the suicide vector pMDS197, resulting to the vector pY3546. pYA3546 was introduced into the suicide vector donor strain MGN-617, which was then mated with S. typhimurium strain xi3761 and tetracycline-resistant transconjugants were selected. These transconjugants were grown in culture medium, and plated in the presence of 5% sucrose to select for a second crossover event to excise the suicide vector from the chromosome but leave in its place the deletion of 1176 bp encoding the pmi gene. One isolate designated xi8650 was stocked and the pmi allele designated pmi-2426.

FILE SEGMENT: CPI
MANUAL CODE: CPI: B04-B04C1; B04-E02; B04-E04; B04-E08; B04-F1000E; B11-A01; B14-A01; B14-G01; B14-S11B; C04-B04C1; C04-E02; C04-E04; C04-E08; C04-F0100E; C11-A01; C14-A01; C14-G01; C14-S11B; D05-H04; D05-H07; D05-H08; D05-H12A; D05-H12D5; D05-H12E; D05-H14A1; D05-H17A5; D05-H18

L128 ANSWER 17 OF 39 BIOSIS COPYRIGHT (c) 2010 The Thomson Corporation on STN DUPLICATE 3

ACCESSION NUMBER: 2009:159133 BIOSIS Full-text
DOCUMENT NUMBER: PREV200900159133
TITLE: Regulated programmed lysis of recombinant Salmonella in host tissues to release protective antigens and confer biological containment.
AUTHOR(S): Kong, Wei; Wanda, Soo-Young; Zhang, Xin; Bollen, Wendy; Tinge, Steven A.; Roland, Kenneth L.; Curtiss, Roy [Reprint Author]
CORPORATE SOURCE: Arizona State Univ, Biodesign Inst, Ctr Infect Dis and Vaccinol, Tempe, AZ 85287 USA
rcurtiss@asu.edu
SOURCE: Proceedings of the National Academy of Sciences of the United States of America, (JUL 8 2008) Vol. 105, No. 27, pp. 9361-9366.
CODEN: PNASA6. ISSN: 0027-8424.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 25 Feb 2009
Last Updated on STN: 25 Feb 2009

ABSTRACT:We have devised and constructed a biological containment system designed to cause programmed bacterial cell lysis with no survivors. We have validated this system, using Salmonella enterica, serovar Typhimurium vaccines for antigen delivery after colonization of host lymphoid tissues. The system is composed of two parts. The first component is Salmonella ***typhimurium*** strain chi 8937, with deletions of asdA and arabinose-regulated expression of murA, two genes required for peptidoglycan synthesis and additional mutations to enhance complete lysis and antigen delivery. The second component is plasmid pYA3681, which encodes arabinose-regulated murA and asdA expression and C2-regulated synthesis of antisense asdA and murA mRNA transcribed from the P22 P-R promoter. An arabinose-regulated c2 gene is present in the chromosome. chi 8937(pYA3681) exhibits arabinose-dependent growth. Upon invasion of host tissues, an arabinose-free environment, transcription of asdA, murA, and c2 ceases, and concentrations of their gene products decrease because of cell division. The drop in C2 concentration results in activation Of PR, driving synthesis of antisense mRNA to block translation of any residual asdA and murA mRNA. A

highly antigenic a-helical domain of Streptococcus pneumoniae Rx1 PspA was cloned into pYA3681, resulting in pYA3685 to test antigen delivery. Mice orally immunized with chi 8937(pYA3685) developed antibody responses to PspA and Salmonella outer membrane proteins. No viable vaccine strain cells were detected in host tissues after 21 days. This system has potential applications with other Gram-negative bacteria in which biological containment would be desirable.

CONCEPT CODE: Genetics - Animal 03506
Physiology and biochemistry of bacteria 31000
Genetics of bacteria and viruses 31500
Immunology - General and methods 34502

INDEX TERMS: Major Concepts
Infection; Immune System (Chemical Coordination and Homeostasis)

INDEX TERMS: Methods & Equipment
immunization: laboratory techniques, immunologic techniques

ORGANISM: Classifier
Enterobacteriaceae 06702
Super Taxa
Facultatively Anaerobic Gram-Negative Rods; Eubacteria; Bacteria; Microorganisms
Organism Name
Salmonella typhimurium (species): pathogen
Taxa Notes
Bacteria, Eubacteria, Microorganisms

ORGANISM: Classifier
Gram-Positive Cocci 07700
Super Taxa
Eubacteria; Bacteria; Microorganisms
Organism Name
Streptococcus pneumoniae (species): pathogen
Taxa Notes
Bacteria, Eubacteria, Microorganisms

ORGANISM: Classifier
Muridae 86375
Super Taxa
Rodentia; Mammalia; Vertebrata; Chordata; Animalia
Organism Name
mouse (common): host
Taxa Notes
Animals, Chordates, Mammals, Nonhuman Vertebrates, Nonhuman Mammals, Rodents, Vertebrates

GENE NAME: mouse murA gene (Muridae); mouse asdA gene (Muridae)

L128 ANSWER 18 OF 39 BIOSIS COPYRIGHT (c) 2010 The Thomson Corporation on STN DUPLICATE 9

ACCESSION NUMBER: 1999:469031 BIOSIS Full-text
DOCUMENT NUMBER: PREV199900469031
TITLE: Construction and evaluation of a DELTAcya DELTAcrp Salmonella typhimurium strain expressing avian pathogenic Escherichia coli O78 LPS as a vaccine to prevent airsacculitis in chickens.
AUTHOR(S): Roland, Kenneth [Reprint author]; Curtiss, Roy, III [Reprint author]; Sizemore, Donata [Reprint author]
CORPORATE SOURCE: Megan Health, Inc., 3655 Vista Avenue, Saint Louis, MO, 63110, USA
SOURCE: Avian Diseases, (July-Sept., 1999) Vol. 43, No. 3, pp. 429-441. print.

CODEN: AVDIAI. ISSN: 0005-2086.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 9 Nov 1999
Last Updated on STN: 9 Nov 1999

ABSTRACT:Avian pathogenic strains of Escherichia coli cause a number of extraintestinal diseases in poultry, including airsacculitis and colisepticemia. Expression of O78 lipopolysaccharide (LPS) is frequently associated with pathogenic isolates. Salmonella, a common poultry contaminant, is a major public health concern. The purpose of this work was to develop an E. coli vaccine for poultry with the use of an attenuated ***Salmonella*** typhimurium carrier that would benefit both the bird and the consumer. Orally administered attenuated S. typhimurium DELTAcya DELTAcrp strains have been shown to provide excellent protection against wild-type Salmonella challenge in chickens. This work describes the construction of a DELTAcya DELTAcrp derivative of an avian pathogenic S. typhimurium that expresses both the homologous group B determinants (O1,4,5,12) and the heterologous E. coli O78 LPS O antigens. This was accomplished by inserting the E. coli rfb region, which encodes the genes required for O78 expression, into the chromosomal cya gene of S. typhimurium, creating a defined deletion/insertion mutation. A DELTAcrp ***mutation*** was introduced in a subsequent step. Expression of both ***O*** antigens was stable in vitro and in vivo. Vaccination of white leghorn chicks at day of hatch and 14 days with the recombinant vaccine strain induced serum immune responses against both S. typhimurium and E. coli LPS and protected the birds against subsequent challenge with an avian pathogenic E. coli O78 strain. Introduction of a mutation in rfc, which encodes the O antigen polymerase, reduced the chain length of the S. typhimurium LPS without affecting the expression of O78. The rfc mutation further enhanced the ability of the vaccine strain to protect chickens against E. coli challenge.

CONCEPT CODE: Poultry production - General and methods 27002
Pathology - General 12502
Bacteriology, general and systematic 30000
Immunology - General and methods 34502

INDEX TERMS: Major Concepts
Animal Husbandry (Agriculture); Immune System (Chemical Coordination and Homeostasis); Pathology

INDEX TERMS: Diseases
airsacculitis: bacterial disease

INDEX TERMS: Diseases
colisepticemia: bacterial disease

INDEX TERMS: Chemicals & Biochemicals
Escherichia coli O78 lipopolysaccharide

ORGANISM: Classifier
Enterobacteriaceae 06702
Super Taxa
Facultatively Anaerobic Gram-Negative Rods; Eubacteria; Bacteria; Microorganisms
Organism Name
Escherichia coli
Salmonella typhimurium: pathogen, strain-delta-cya delta-crp
Taxa Notes
Bacteria, Eubacteria, Microorganisms

ORGANISM: Classifier
Galliformes 85536
Super Taxa
Aves; Vertebrata; Chordata; Animalia
Organism Name

chicken
Taxa Notes
Animals, Birds, Chordates, Nonhuman Vertebrates, Vertebrates

L128 ANSWER 19 OF 39 BIOSIS COPYRIGHT (c) 2010 The Thomson Corporation on STN DUPLICATE 10

ACCESSION NUMBER: 1999:250921 BIOSIS Full-text
DOCUMENT NUMBER: PREV199900250921
TITLE: Protection and immune responses induced by attenuated Salmonella typhimurium UK-1 strains.
AUTHOR(S): Zhang, Xin; Kelly, Sandra M.; Bollen, Wendy; Curtiss, Roy, III [Reprint author]
CORPORATE SOURCE: Department of Biology, Washington University, Saint Louis, MO, 63130, USA
SOURCE: Microbial Pathogenesis, (March, 1999) Vol. 26, No. 3, pp. 121-130. print.
CODEN: MIPAEV. ISSN: 0882-4010.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 2 Jul 1999
Last Updated on STN: 2 Jul 1999

ABSTRACT:We previously reported that Salmonella typhimurium SR-11 mutants with deletion mutations in the genes encoding adenylate cyclase (cya) and the cAMP receptor protein (crp) are avirulent and protective in mice. Salmonella typhimurium UK-1 is highly virulent for chicks (oral LD50 of 3 X 103 CFU) and mice (oral LD50 of 8.5 X 103 CFU) and is capable of lethal infections in pigs, calves and horses. We postulated that attenuated derivatives of this lethal strain would probably induce a higher level of protective immunity than achieved with ***attenuated*** derivatives of less virulent S. typhimurium strains such as SR11. To test this hypothesis, we have constructed S. typhimurium UK-1 DELTAcya-12 DELTAcrp-11 mutant strain chi3985 and its virulence plasmid cured derivative chi4095 to investigate their avirulence and immunogenicity in mice. We found that the mutants are avirulent and able to induce protective immune responses in BALB/c mice. These ***mutant*** strains retained wild-type ability to colonize the gut associated lymphoid tissue but reach and persist in spleen and liver at a significantly lower level than the wild-type parent strain. Mice survived oral infection with >1 X 109 CFU of chi3985 (the equivalent to 105 50% lethal doses of wild-type S. typhimurium UK-1) and were fully protected against challenge with 105 times the LD50 of the wild-type parent. Immunized mice developed a high level of serum IgG titre to Salmonella LPS and delayed-type hypersensitivity (DTH) response to S. typhimurium outer ***membrane*** proteins. Compared to the virulence plasmid-containing strain chi3985, the virulence plasmid cured DELTAcya DELTAcrp mutant strain chi4095 was more attenuated and less protective, as some mice immunized with chi4095 died when challenged with the wild-type UK-1 strain. This work demonstrates that S. typhimurium UK-1 DELTAcrp DELTAcya ***mutant*** strain may be a potential live vaccine to induce protective immunity against Salmonella infection or to deliver foreign antigens to the immune system.

CONCEPT CODE: Pharmacology - General 22002
Biochemistry studies - General 10060
Digestive system - General and methods 14001
Genetics of bacteria and viruses 31500
Medical and clinical microbiology - General and methods 36001
Immunology - General and methods 34502

Bacteriology, general and systematic 30000
Blood - General and methods 15001

INDEX TERMS: Major Concepts
Immune System (Chemical Coordination and Homeostasis); Infection; Molecular Genetics (Biochemistry and Molecular Biophysics); Pharmacology

INDEX TERMS: Parts, Structures, & Systems of Organisms
gut associated lymphoid tissue: digestive system; liver: digestive system; spleen: blood and lymphatics, immune system

INDEX TERMS: Diseases
bacterial infection: bacterial disease
Bacterial Infections (MeSH)

INDEX TERMS: Chemicals & Biochemicals
attenuated Salmonella vaccine: vaccine; outer membrane proteins; virulence
plasmid; IgG [immunoglobulin G]; LPS [lipopolysaccharide]; Salmonella typhimurium crp gene [cAMP receptor protein gene]: deletion mutation; Salmonella typhimurium cya gene [adenylate cyclase gene]: deletion mutation

INDEX TERMS: Methods & Equipment
oral immunization: immunization method

INDEX TERMS: Miscellaneous Descriptors
bacterial challenge; bacterial colonization; bacterial virulence; delayed-type hypersensitivity response; immune responses; protective immunity: induction

ORGANISM: Classifier
Bovidae 85715
Super Taxa
Artiodactyla; Mammalia; Vertebrata; Chordata; Animalia
Organism Name
cow: animal model, calf
Taxa Notes
Animals, Artiodactyls, Chordates, Mammals, Nonhuman Vertebrates, Nonhuman Mammals, Vertebrates

ORGANISM: Classifier
Enterobacteriaceae 06702
Super Taxa
Facultatively Anaerobic Gram-Negative Rods; Eubacteria; Bacteria; Microorganisms
Organism Name
Salmonella typhimurium: SR-11
mutants, attenuated UK-1 strains,
mutant strains, pathogen
Taxa Notes
Bacteria, Eubacteria, Microorganisms

ORGANISM: Classifier
Equidae 86145
Super Taxa
Perissodactyla; Mammalia; Vertebrata; Chordata; Animalia
Organism Name
horse: animal model
Taxa Notes
Animals, Chordates, Mammals, Nonhuman Vertebrates, Nonhuman Mammals, Perissodactyls, Vertebrates

ORGANISM: Classifier
Galliformes 85536
Super Taxa

Aves; Vertebrata; Chordata; Animalia
Organism Name
chicken: animal model, chick
Taxa Notes
Animals, Birds, Chordates, Nonhuman Vertebrates, Vertebrates
ORGANISM: Classifier
Muridae 86375
Super Taxa
Rodentia; Mammalia; Vertebrata; Chordata; Animalia
Organism Name
BALB/c mouse: animal model
Taxa Notes
Animals, Chordates, Mammals, Nonhuman Vertebrates, Nonhuman Mammals, Rodents, Vertebrates
ORGANISM: Classifier
Suidae 85740
Super Taxa
Artiodactyla; Mammalia; Vertebrata; Chordata; Animalia
Organism Name
pig: animal model
Taxa Notes
Animals, Artiodactyls, Chordates, Mammals, Nonhuman Vertebrates, Nonhuman Mammals, Vertebrates
REGISTRY NUMBER: 9012-42-4 (ADENYLATE CYCLASE)

L128 ANSWER 20 OF 39 BIOSIS COPYRIGHT (c) 2010 The Thomson Corporation on STN
ACCESSION NUMBER: 2009:193250 BIOSIS Full-text
DOCUMENT NUMBER: PREV200900193250
TITLE: Improving DNA Vaccine Vector for Efficient Vaccine Delivery Using Live Attenuated Bacterial Carrier.
AUTHOR(S): Kong, W. [Reprint Author]; Zhang, X.; Ashraf, S.; Curtiss, R. III
CORPORATE SOURCE: Arizona State Univ, Phoenix, AZ USA
SOURCE: Abstracts of the General Meeting of the American Society for Microbiology, (2008) Vol. 108, pp. 668.
Meeting Info.: 108th General Meeting of the American-Society-for-Microbiology. Boston, MA, USA. June 01 -05, 2008. Amer Soc Microbiol.
ISSN: 1060-2011.
DOCUMENT TYPE: Conference; (Meeting)
Conference; (Meeting Poster)
LANGUAGE: English
ENTRY DATE: Entered STN: 18 Mar 2009
Last Updated on STN: 18 Mar 2009
CONCEPT CODE: General biology - Symposia, transactions and proceedings 00520
Cytology - Human 02508
Genetics - General 03502
Genetics - Human 03508
Pathology - Therapy 12512
Pharmacology - General 22002
Pharmacology - Clinical pharmacology 22005
Pharmacology - Immunological processes and allergy 22018
Physiology and biochemistry of bacteria 31000
Genetics of bacteria and viruses 31500
Virology - General and methods 33502
Immunology - General and methods 34502
INDEX TERMS: Major Concepts

Pharmacology; Immune System (Chemical Coordination and Homeostasis); Molecular Genetics (Biochemistry and Molecular Biophysics)

INDEX TERMS: Parts, Structures, & Systems of Organisms
cell wall

INDEX TERMS: Chemicals & Biochemicals
enhanced green fluorescent protein [EGFP]; DNA vaccine: immunologic-drug, immunostimulant-drug, vaccine; DNA vector; bacterial plasmids; nuclease: degradation; pYA3650: DNA vaccine vector; araCPBAD activator-promoter complex; anti-sense mRNA: synthesis; SV40 promoter: DNA nuclear targeting sequence; BGH poly A; pYA4050: DNA vaccine vector; pYA4545

INDEX TERMS: Methods & Equipment
live attenuated bacterial carrier: drug delivery device

INDEX TERMS: Miscellaneous Descriptors
inflammatory response; vaccine delivery

ORGANISM: Classifier
Enterobacteriaceae 06702
Super Taxa
Facultatively Anaerobic Gram-Negative Rods; Eubacteria; Bacteria; Microorganisms
Organism Name
Salmonella typhimurium (species)
Taxa Notes
Bacteria, Eubacteria, Microorganisms

ORGANISM: Classifier
Hominidae 86215
Super Taxa
Primates; Mammalia; Vertebrata; Chordata; Animalia
Organism Name
Int-407 cell line (cell_line): host, human embryonic intestine cells
Taxa Notes
Animals, Chordates, Humans, Mammals, Primates, Vertebrates

ORGANISM: Classifier
Orthomyxoviridae 03505
Super Taxa
Negative Sense ssRNA Viruses; Viruses; Microorganisms
Organism Name
Influenza virus (common)
Taxa Notes
Microorganisms, Negative Sense Single-Stranded RNA Viruses, Viruses

ORGANISM: Classifier
Polyomaviridae 03117
Super Taxa
dsDNA Viruses; Viruses; Microorganisms
Organism Name
SV40 (common) [Simian virus 40 (species)]
Taxa Notes
Double-Stranded DNA Viruses, Microorganisms, Viruses

REGISTRY NUMBER: 180033-16-3 (enhanced green fluorescent protein)
180033-16-3 (EGFP)
9026-81-7 (nuclease)

GENE NAME: bacteria asdA gene (Bacteria): expression; bacteria murA gene (Bacteria): expression

L128 ANSWER 21 OF 39 BIOSIS COPYRIGHT (c) 2010 The Thomson Corporation on STN

ACCESSION NUMBER: 2008:193127 BIOSIS Full-text
DOCUMENT NUMBER: PREV200800188968
TITLE: Regulated programmed lysis of recombinant Salmonella in vivo to release protective antigens and confer biological containment.
AUTHOR(S): Kong, W. [Reprint Author]; Wanda, S-Y.; Zhang, X.; Bollen, W.; Tinge, S.; Curtiss, R. III
CORPORATE SOURCE: Washington Univ, St Louis, MO 63130 USA
SOURCE: Abstracts of the General Meeting of the American Society for Microbiology, (2007) Vol. 107, pp. 282-283. Meeting Info.: 107th General Meeting of the American-Society-for-Microbiology. Toronto, CANADA. 2007,. Amer Soc Microbiol. ISSN: 1060-2011.
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 19 Mar 2008
Last Updated on STN: 19 Mar 2008
CONCEPT CODE: General biology - Symposia, transactions and proceedings 00520
Genetics - General 03502
Genetics - Animal 03506
Biochemistry studies - Proteins, peptides and amino acids 10064
Biochemistry studies - Lipids 10066
Biochemistry studies - Carbohydrates 10068
Pathology - Therapy 12512
Pharmacology - General 22002
Pharmacology - Immunological processes and allergy 22018
Physiology and biochemistry of bacteria 31000
Genetics of bacteria and viruses 31500
Immunology - General and methods 34502
Medical and clinical microbiology - Bacteriology 36002
INDEX TERMS: Major Concepts
Pharmacology; Infection; Immune System (Chemical Coordination and Homeostasis); Molecular Genetics (Biochemistry and Molecular Biophysics)
INDEX TERMS: Parts, Structures, & Systems of Organisms
cell wall
INDEX TERMS: Diseases
streptococcal infection: bacterial disease, prevention and control
Streptococcal Infections (MeSH)
INDEX TERMS: Chemicals & Biochemicals
lipopolysaccharide; diaminopimelic acid; arabinose; muramic acid; C2 protein; outer membrane protein; GDP-fucose; GDP-mannose; colanic acid; MurA: synthesis; Asd: synthesis; Salmonella typhimurium vaccine: immunologic-drug, immunostimulant-drug, oral administration
INDEX TERMS: Miscellaneous Descriptors
cell lysis
ORGANISM: Classifier
Gram-Positive Cocci 07700
Super Taxa
Eubacteria; Bacteria; Microorganisms

Organism Name
Streptococcus pneumoniae (species): pathogen
Taxa Notes
Bacteria, Eubacteria, Microorganisms
ORGANISM: Classifier
Muridae 86375
Super Taxa
Rodentia; Mammalia; Vertebrata; Chordata; Animalia
Organism Name
mouse (common): host, strain-BALB/c
Taxa Notes
Animals, Chordates, Mammals, Nonhuman Vertebrates, Nonhuman Mammals, Rodents, Vertebrates
REGISTRY NUMBER: 583-93-7 (diaminopimelic acid)
147-81-9 (arabinose)
1114-41-6 (muramic acid)
15839-70-0 (GDP-fucose)
3123-67-9 (GDP-mannose)
9012-87-7 (colanic acid)
GENE NAME: Salmonella typhimurium relA gene (Enterobacteriaceae): mutation; Salmonella typhimurium murA gene (Enterobacteriaceae); Salmonella typhimurium asd gene (Enterobacteriaceae); Salmonella typhimurium c2 gene (Enterobacteriaceae); Salmonella typhimurium gmd gene (Enterobacteriaceae): deletion mutation; Salmonella typhimurium fcl gene (Enterobacteriaceae): deletion mutation

L128 ANSWER 22 OF 39 BIOSIS COPYRIGHT (c) 2010 The Thomson Corporation on STN
ACCESSION NUMBER: 2008:193106 BIOSIS Full-text
DOCUMENT NUMBER: PREV200800188947
TITLE: Salmonella vaccine vectors displaying regulated delayed in vivo attenuation to enhance immunogenicity.
AUTHOR(S): Curtiss, R. III [Reprint Author]; Wanda, S-Y.; Zhang, X.; Gunn, B.
CORPORATE SOURCE: Arizona State Univ, Tempe, AZ 85287 USA
SOURCE: Abstracts of the General Meeting of the American Society for Microbiology, (2007) Vol. 107, pp. 278.
Meeting Info.: 107th General Meeting of the American-Society-for-Microbiology. Toronto, CANADA. 2007,.
Amer Soc Microbiol.
ISSN: 1060-2011.
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 19 Mar 2008
Last Updated on STN: 19 Mar 2008
CONCEPT CODE: General biology - Symposia, transactions and proceedings 00520
Genetics - General 03502
Biochemistry studies - Carbohydrates 10068
Enzymes - General and comparative studies: coenzymes 10802
Pathology - Therapy 12512
Blood - Blood and lymph studies 15002
Blood - Blood cell studies 15004
Pharmacology - General 22002

Pharmacology - Immunological processes and allergy 22018
Physiology and biochemistry of bacteria 31000
Genetics of bacteria and viruses 31500
Immunology - General and methods 34502
INDEX TERMS: Major Concepts
Pharmacology; Immune System (Chemical Coordination and Homeostasis); Molecular Genetics (Biochemistry and Molecular Biophysics)
INDEX TERMS: Parts, Structures, & Systems of Organisms
lymphoid tissues: blood and lymphatics
INDEX TERMS: Chemicals & Biochemicals
mannose-6-phosphate; fructose-6-phosphate; O antigen; phosphomannose isomerase [EC 5.3.1.8]; Salmonella vaccine: immunologic-drug, immunostimulant-drug, oral administration, vaccine
INDEX TERMS: Miscellaneous Descriptors
enhanced immunogenecity
ORGANISM: Classifier
Enterobacteriaceae 06702
Super Taxa
Facultatively Anaerobic Gram-Negative Rods; Eubacteria; Bacteria; Microorganisms
Organism Name
Salmonella typhimurium (species)
Taxa Notes
Bacteria, Eubacteria, Microorganisms
REGISTRY NUMBER: 3672-15-9 (mannose-6-phosphate)
643-13-0 (fructose-6-phosphate)
9023-88-5 (phosphomannose isomerase)
9023-88-5 (EC 5.3.1.8)
GENE NAME: Salmonella typhimurium rpoS gene (Enterobacteriaceae); Salmonella typhimurium fur gene (Enterobacteriaceae); Salmonella typhimurium phoPQ gene (Enterobacteriaceae); Salmonella typhimurium crp gene (Enterobacteriaceae)

L128 ANSWER 23 OF 39 BIOSIS COPYRIGHT (c) 2010 The Thomson Corporation on STN
ACCESSION NUMBER: 2003:556367 BIOSIS Full-text
DOCUMENT NUMBER: PREV200300557028
TITLE: Construction and application of host-vector systems for DNA vaccine vector delivery.
AUTHOR(S): Kong, W. [Reprint Author]; Wanda, S. Y. [Reprint Author]; Curtiss, R. III [Reprint Author]
CORPORATE SOURCE: Washington University, Saint Louis, MO, USA
SOURCE: Abstracts of the General Meeting of the American Society for Microbiology, (2003) Vol. 103, pp. Z-016. http://www.asmusa.org/mtgsrc/generalmeeting.htm. cd-rom.
Meeting Info.: 103rd American Society for Microbiology General Meeting. Washington, DC, USA. May 18-22, 2003. American Society for Microbiology.
ISSN: 1060-2011 (ISSN print).
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 26 Nov 2003
Last Updated on STN: 26 Nov 2003
ABSTRACT:A novel bacterial host-vector system to deliver DNA vaccine vectors in

vivo was developed using attenuated Salmonella typhimuriun. DNA vaccine vectors (pYA3650 and pYA3651) possess an eukaryotic DNA expression cassette flanked by transcription terminators, a regulatable araCP-***BAD*** activator-promoter complex controlling the in vitro/in vivo expression of two genetically modified genes (asd and murA) necessary for synthesis of the rigid layer of the bacterial cell wall, a regulated synthesis of anti-sense mRNA to completely turn off in vivo translation of asdA and murA mRNA, and a replicon necessary for replication in bacteria but not in eukaryotic cells. The attenuated S. typhimuriun possesses deletion and deletion-insertion mutations for the asdA, murA and araCBAD genes to regulate delayed lysis with bacteria colonizing lymphoid tissues and undergoing 5 to 10 generations of growth prior to lysis to release the DNA vaccine. The system is totally attenuated and exhibits complete biological containment with no survivors. Eimeria acervulina sporozoite and merozoite antigen genes with a Kozak translation initiation sequence and ATG start codon at the 5' terminus and an in-frame fusion of the FLAG sequence at the 3' terminus were cloned into the pYA3650 and pYA3651 vectors to evaluate the DNA vaccine host-vector delivery system.

CONCEPT CODE: General biology - Symposia, transactions and proceedings 00520
Genetics - General 03502
Genetics - Animal 03506
Pathology - Therapy 12512
Pharmacology - General 22002
Pharmacology - Immunological processes and allergy 22018
Physiology and biochemistry of bacteria 31000
Genetics of bacteria and viruses 31500
Immunology - General and methods 34502
Food microbiology - General and miscellaneous 39008
Invertebrata: comparative, experimental morphology, physiology and pathology - Protozoa 64002

INDEX TERMS: Major Concepts
Bioprocess Engineering; Immune System (Chemical Coordination and Homeostasis); Infection; Methods and Techniques; Molecular Genetics (Biochemistry and Molecular Biophysics); Pharmacology

INDEX TERMS: Chemicals & Biochemicals
DNA vaccine: immunologic-drug, immunostimulant-drug; merozoite antigen genes; pYA3650: vaccine vector; pYA3651: vaccine vector; sporozoite antigen genes

INDEX TERMS: Methods & Equipment
bacterial host-vector vaccine delivery system: clinical techniques, immunologic techniques, laboratory techniques, therapeutic and prophylactic techniques; host-vector system construction: applied and field techniques

INDEX TERMS: Miscellaneous Descriptors
vaccine development

ORGANISM: Classifier
Enterobacteriaceae 06702
Super Taxa
Facultatively Anaerobic Gram-Negative Rods; Eubacteria; Bacteria; Microorganisms
Organism Name
Salmonella typhimurium (species): attenuated, vaccine candidate
Taxa Notes
Bacteria, Eubacteria, Microorganisms

ORGANISM: Classifier
Sporozoa 35400

Super Taxa
Protozoa; Invertebrata; Animalia
Organism Name
Eimeria acervulina (species): sporozoite
Taxa Notes
Animals, Invertebrates, Microorganisms, Protozoans
GENE NAME: Salmonella typhimurium araCBAD gene (Enterobacteriaceae): deletion mutation, deletion-insertion mutation; Salmonella typhimurium asdA gene (Enterobacteriaceae): deletion mutation, deletion-insertion mutation; Salmonella typhimurium murA gene (Enterobacteriaceae): deletion mutation , deletion-insertion mutation

L128 ANSWER 24 OF 39 BIOSIS COPYRIGHT (c) 2010 The Thomson Corporation on STN
ACCESSION NUMBER: 2002:609166 BIOSIS Full-text
DOCUMENT NUMBER: PREV200200609166
TITLE: Salmonella typhimurium UK-1 DELTAPfur::araC PBADfur DELTApmi mutants are highly attenuated and induced protective immunity in BALB/c Mice.
AUTHOR(S): Zhang, X. [Reprint author]; Kang, H. Y. [Reprint author]; Bollen, W. [Reprint author]; Curtiss, R., III [Reprint author]
CORPORATE SOURCE: Washington University, Saint Louis, MO, USA
SOURCE: Abstracts of the General Meeting of the American Society for Microbiology, (2002) Vol. 102, pp. 512-513. print. Meeting Info.: 102nd General Meeting of the American Society for Microbiology. Salt Lake City, UT, USA. May 19-23, 2002. American Society for Microbiology. ISSN: 1060-2011.
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 27 Nov 2002
Last Updated on STN: 27 Nov 2002
ABSTRACT: Salmonella typhimurium UK-1 DELTAPfur ::araC PBADfur DELTApmi mutants were constructed and their virulence and protective ability evaluated in BALB/c mice. 1) This study was based on the facts that deletion of the fur gene of S. typhimurium highly attenuated Salmonella but rendered it poorly immunogenic, and that since LPS is needed for Salmonella to colonize the intestinal tract and reach and persist in lymphoid organs necessary to stimulate protective immunity, permanent rough mutants of Salmonella have not been very effective when used as live oral vaccines. 2) Defined ***DELTApmi*** -2426 and DELTAPfur::araC PBADfur mutants were constructed and evaluated in mice. These mutants enable regulatable synthesis of LPS and expression of fur, respectively. We found that although strains with either mutation protected mice against challenge with the wild-type parent at 104-fold the LD50, each exhibited virulence as indicated by some death in groups of mice receiving high doses. 3) Strains with both the DELTApmi-2426 and DELTAPfur::araC PBADfur deletion mutations exhibited high attenuation and immunogenicity. Mice survived inoculation with >109 CFU of the ***DELTApmi*** DELTAPfur::araC PBADfur mutant strain and were protected against challenge with the wild-type parent at 105 times the LD50. Furthermore, cross protective immunity against other Salmonella serotypes was also observed. These results indicate that the DELTAPfur

::araC PBADfur DELTApmi mutant may serve as an improved
vaccine candidate against a diversity of Salmonella subspecies I serotypes.
CONCEPT CODE: General biology - Symposia, transactions and proceedings 00520
Genetics - General 03502
Genetics - Animal 03506
Biochemistry studies - Lipids 10066
Biochemistry studies - Carbohydrates 10068
Physiology and biochemistry of bacteria 31000
Genetics of bacteria and viruses 31500
Immunology - General and methods 34502
INDEX TERMS: Major Concepts
Immune System (Chemical Coordination and Homeostasis); Infection; Molecular Genetics (Biochemistry and Molecular Biophysics)
INDEX TERMS: Chemicals & Biochemicals
LPS [lipopolysaccharide]; live oral vaccine
INDEX TERMS: Miscellaneous Descriptors
deletion mutations; Meeting Abstract
ORGANISM: Classifier
Enterobacteriaceae 06702
Super Taxa
Facultatively Anaerobic Gram-Negative Rods; Eubacteria; Bacteria; Microorganisms
Organism Name
Salmonella typhimurium: pathogen
Taxa Notes
Bacteria, Eubacteria, Microorganisms
ORGANISM: Classifier
Muridae 86375
Super Taxa
Rodentia; Mammalia; Vertebrata; Chordata; Animalia
Organism Name
BALB/c mouse
Taxa Notes
Animals, Chordates, Mammals, Nonhuman Vertebrates, Nonhuman Mammals, Rodents, Vertebrates
GENE NAME: Salmonella typhimurium fur
gene (Enterobacteriaceae)

L128 ANSWER 25 OF 39 BIOSIS COPYRIGHT (c) 2010 The Thomson Corporation on STN
ACCESSION NUMBER: 2002:223181 BIOSIS Full-text
DOCUMENT NUMBER: PREV200200223181
TITLE: Induction of Th 2-type immune responses against recombinant PspA antigen delivered by attenuated live Salmonella typhimurium vaccines.
AUTHOR(S): Kang, H. Y. [Reprint author]; Curtiss, R., III [Reprint author]
CORPORATE SOURCE: Washington University, Saint Louis, MO, USA
SOURCE: Abstracts of the General Meeting of the American Society for Microbiology, (2001) Vol. 101, pp. 336. print.
Meeting Info.: 101st General Meeting of the American Society for Microbiology. Orlando, FL, USA. May 20-24, 2001. American Society of Microbiology.
ISSN: 1060-2011.
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 3 Apr 2002

Last Updated on STN: 3 Apr 2002

ABSTRACT: Attenuated Salmonella typhimurium expressing foreign antigens primarily elicit a Th 1 dominant immune response to both foreign and Salmonella antigens. We hypothesized that a proper antigen modification including subcellular location of foreign antigen and/or changing Salmonella surface adhesins might result in a different interaction with antigen presenting cells, and induce augmented levels of a Th 2-type immune response. Various mutations for expression of aggregative thin fimbriae (Agf) were constructed and introduced into an attenuated S. typhimurium DELTAcrp strain. A DELTAasd mutation was also introduced into the attenuated Salmonella strains to establish a balanced-lethal vector-host system allowing stable maintenance of the Asd+ expression vector. The highly antigenic alpha-helical region of PspA (pneumococcal surface protein A) was subcloned as a fusion to the beta-lactamase signal sequence on a multicopy Asd+ periplasmic secretion vector. The majority of the recombinant PspA expressed in Salmonella was detected in the supernatant and periplasmic fractions. After single oral immunization of BALB/c mice with 109 CFU, the recombinant Salmonella-PspA vaccine strains stimulated IgG antibody responses to both the heterologous antigen PspA and Salmonella outer ***membrane*** proteins (SOMPs). Regardless of the Salmonella carrier strain genotype, the induced antibody response was higher to PspA than to SOMPs with a higher anti-PspA titer of IgG1 than IgG2a. A sublethal challenge with Streptococcus pneumoniae WU2 boosted PspA antibody levels and maintained similar IgG2a/IgG1 ratios as seen before the challenge. All Salmonella vaccines, except a strain carrying a deletion of the agfBAC operon, induced a predominant (80 to 90%) IgG2a isotype response to SOMPs.

CONCEPT CODE:
General biology - Symposia, transactions and proceedings 00520
Cytology - Animal 02506
Physiology and biochemistry of bacteria 31000
Immunology - General and methods 34502

INDEX TERMS: Major Concepts
Immune System (Chemical Coordination and Homeostasis); Infection

INDEX TERMS: Parts, Structures, & Systems of Organisms
T helper cell type 2: immune system

INDEX TERMS: Chemicals & Biochemicals
attenuated live bacterial vaccine: vaccine; immunoglobulin G1; immunoglobulin G2a; outer membrane protein; pneumococcal surface protein A [PspA]

INDEX TERMS: Miscellaneous Descriptors
immune response; immunization; Meeting Abstract

ORGANISM: Classifier
Enterobacteriaceae 06702
Super Taxa
Facultatively Anaerobic Gram-Negative Rods; Eubacteria; Bacteria; Microorganisms
Organism Name
Salmonella typhimurium: pathogen
Taxa Notes
Bacteria, Eubacteria, Microorganisms

ORGANISM: Classifier
Gram-Positive Cocci 07700
Super Taxa
Eubacteria; Bacteria; Microorganisms
Organism Name
Streptococcus pneumoniae: pathogen
Taxa Notes
Bacteria, Eubacteria, Microorganisms

ORGANISM: Classifier
Muridae 86375
Super Taxa
Rodentia; Mammalia; Vertebrata; Chordata; Animalia
Organism Name
mouse: animal model
Taxa Notes
Animals, Chordates, Mammals, Nonhuman Vertebrates, Nonhuman Mammals, Rodents, Vertebrates

L128 ANSWER 26 OF 39 BIOSIS COPYRIGHT (c) 2010 The Thomson Corporation on STN
ACCESSION NUMBER: 1995:290786 BIOSIS Full-text
DOCUMENT NUMBER: PREV199598305086
TITLE: Involvement of cyclic AMP in the expression of iron induced adhesiveness in Salmonella.
AUTHOR(S): Amin, Iqbal I.; Burns-Keliher, Lisa; Curtiss, Roy, III
CORPORATE SOURCE: Washington Univ., St. Louis, MO 63130, USA
SOURCE: Abstracts of the General Meeting of the American Society for Microbiology, (1995) Vol. 95, No. 0, pp. 257.
Meeting Info.: 95th General Meeting of the American Society for Microbiology. Washington, D.C., USA. May 21-25, 1995.
ISSN: 1060-2011.
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 5 Jul 1995
Last Updated on STN: 5 Jul 1995
CONCEPT CODE: General biology - Symposia, transactions and proceedings 00520
Cytology - Animal 02506
Cytology - Human 02508
Biochemistry studies - Nucleic acids, purines and pyrimidines 10062
Biochemistry studies - Proteins, peptides and amino acids 10064
Biochemistry studies - Minerals 10069
Biophysics - Molecular properties and macromolecules 10506
Biophysics - Membrane phenomena 10508
Metabolism - Minerals 13010
Metabolism - Proteins, peptides and amino acids 13012
Metabolism - Nucleic acids, purines and pyrimidines 13014
Physiology and biochemistry of bacteria 31000
Genetics of bacteria and viruses 31500
INDEX TERMS: Major Concepts
Biochemistry and Molecular Biophysics; Cell Biology; Genetics; Membranes (Cell Biology); Metabolism; Physiology
INDEX TERMS: Chemicals & Biochemicals
CYCLIC AMP; IRON; ADENYLATE CYCLASE
INDEX TERMS: Miscellaneous Descriptors
ADENYLATE CYCLASE; CYCLIC AMP RECEPTOR PROTEIN; FERRIC UPTAKE REGULATOR;
INVA; INVB; INVC; INVD; INVH; IRON INDUCED ADHESIN GENE;
MEETING ABSTRACT; MUTATION; STRAIN TML
ORGANISM: Classifier
Enterobacteriaceae 06702
Super Taxa

Facultatively Anaerobic Gram-Negative Rods; Eubacteria; Bacteria; Microorganisms
Organism Name
Salmonella typhimurium
Taxa Notes
Bacteria, Eubacteria, Microorganisms
ORGANISM: Classifier
Galliformes 85536
Super Taxa
Aves; Vertebrata; Chordata; Animalia
Organism Name
chicken
Taxa Notes
Animals, Birds, Chordates, Nonhuman Vertebrates, Vertebrates
ORGANISM: Classifier
Hominidae 86215
Super Taxa
Primates; Mammalia; Vertebrata; Chordata; Animalia
Organism Name
Hominidae
Taxa Notes
Animals, Chordates, Humans, Mammals, Primates, Vertebrates
REGISTRY NUMBER: 60-92-4 (CYCLIC AMP)
7439-89-6 (IRON)
9012-42-4 (ADENYLATE CYCLASE)

L128 ANSWER 27 OF 39 BIOSIS COPYRIGHT (c) 2010 The Thomson Corporation on STN
ACCESSION NUMBER: 1994:330544 BIOSIS Full-text
DOCUMENT NUMBER: PREV199497343544
TITLE: Characterization of a deletion mutant of Salmonella typhimurium UK-1 affecting colonization of deep tissue.
AUTHOR(S): Bollen, W. S.; Burns-Keliher, L.; Tinge, S. A.; Zhang, X.; Curtiss, R., III
CORPORATE SOURCE: Washington Univ., St. Louis, MO, USA
SOURCE: Abstracts of the General Meeting of the American Society for Microbiology, (1994) Vol. 94, No. 0, pp. 85.
Meeting Info.: 94th General Meeting of the American Society for Microbiology. Las Vegas, Nevada, USA. May 23-27, 1994.
ISSN: 1060-2011.
DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 2 Aug 1994
Last Updated on STN: 2 Aug 1994
CONCEPT CODE: General biology - Symposia, transactions and proceedings 00520
Biochemistry studies - Proteins, peptides and amino acids 10064
Biophysics - Membrane phenomena 10508
Digestive system - Pathology 14006
Blood - Lymphatic tissue and reticuloendothelial system 15008
Genetics of bacteria and viruses 31500
Medical and clinical microbiology - Bacteriology 36002
INDEX TERMS: Major Concepts
Blood and Lymphatics (Transport and Circulation);

Digestive System (Ingestion and Assimilation); Genetics; Infection; Membranes (Cell Biology)
INDEX TERMS: Miscellaneous Descriptors
CRP GENE; LIVER; MEETING ABSTRACT; OUTER MEMBRANE PROTEINS; SPLEEN; VIRULENCE
ORGANISM: Classifier
Enterobacteriaceae 06702
Super Taxa
Facultatively Anaerobic Gram-Negative Rods; Eubacteria; Bacteria; Microorganisms
Organism Name
Enterobacteriaceae
Taxa Notes
Bacteria, Eubacteria, Microorganisms
ORGANISM: Classifier
Muridae 86375
Super Taxa
Rodentia; Mammalia; Vertebrata; Chordata; Animalia
Organism Name
mouse
Taxa Notes
Animals, Chordates, Mammals, Nonhuman Vertebrates, Nonhuman Mammals, Rodents, Vertebrates

L128 ANSWER 28 OF 39 BIOTECHDS COPYRIGHT 2010 THOMSON REUTERS on STN
ACCESSION NUMBER: 2003-18332 BIOTECHDS Full-text
TITLE: Novel carrier microbe for delivering desired gene product to a human, comprises a live attenuated bacteria having a recombinant rpoS+ gene, inactivating mutations, and a recombinant gene encoding desired gene product;
recombinant vaccine preparation for use in infection therapy
AUTHOR: CURTISS R; NICKERSON C A
PATENT ASSIGNEE: CURTISS R; NICKERSON C A
PATENT INFO: US 20030031683 13 Feb 2003
APPLICATION INFO: US 2002-138239 3 May 2002
PRIORITY INFO: US 2002-138239 3 May 2002; US 1997-970789 14 Nov 1997
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: WPI: 2003-466217 [44]
ABSTRACT: DERWENT ABSTRACT:
NOVELTY - A carrier microbe (I) for the delivery of a desired gene product to a human, comprising a live attenuated bacteria having a recombinant rpoS+ gene, one or more inactivating mutations which render the microbe attenuated, and a second recombinant gene encoding the desired gene product, is new.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following: (1) producing (M1) a strain of (I), by selecting a strain of bacteria having an RpoS+ phenotype by performing a test to determine the RpoS phenotype of the strain, producing one or more inactivating mutations which render the strain attenuated , and introducing into the strain a recombinant gene encoding a desired gene product; (2) producing carrier microbes for delivery of a desired gene product to a human, by generating a strain of the above mentioned live attenuated bacteria; (3) a composition (II) for immunizing a human, comprising the above mentioned live attenuated strain of bacteria; (4) a genetically engineered cell (III) comprising the above mentioned live attenuated strain of bacteria; and (5)

assessing (M2) immunogenicity of a bacteria, by determining the RpoS phenotype of the bacteria, where the presence of RpoS+ phenotype indicates increased immunogenicity compared to an isogenic bacteria having RpoS- phenotype. BIOTECHNOLOGY - Preferred Carrier Microbe: (I) is Salmonella, preferably S.typhi. The attenuated S.typhi comprises an inactivating mutation in a mutation in a gene such as pab, pur, aro, asd, dap, nadA, pncB, galE, pmi, fur, rpsL, ompR, htrA, hemA, cdt, cya, crp, dam, phoP, phoQ, rfc, poxA, galU, metL, metH, mviA, sodC, recA, ssrA, ssrB, sirA, sirB, sirC, inv, hilA, hilC, hilD, rpoE, flgM, tonB, slyA and their combinations. The second recombinant gene encodes a product from a pathogen (such as virus, bacterium, protozoan, parasite or fungus) to the human, and encodes a product capable of suppressing, modulating, or augmenting an immune response in the human. The second recombinant gene encodes an auto-antigen, such as gamete-specific antigen, or encodes an allergen to the human, a cytokine that suppresses tumor growth and spread, an enzyme that converts a non-toxic prodrug into an anti-tumor drug or tumor-specific antigen. Preferred Composition: The attenuated strain is in a carrier. Preferred Engineered Cell: (III) comprises the live attenuated bacteria having a recombinant virulence gene is capable of expressing a gene product that facilitate invasion and colonization of the gut associated lymphoid tissues. Preferred Method: In M2, the RpoS phenotype is determined by assessing one or both catalase activity and glycogen biosynthesis activity of S.typhi. ACTIVITY - Antibacterial; Virucide; Fungicide; Protozoacide. MECHANISM OF ACTION - Vaccine. Superior immunogenicity of an attenuated RpoS+ strain of S.typhimurium following intranasal administration compared to the immunogenicity of the corresponding RpoS- strain administered by the same route was demonstrated. For each attenuated bacterial vaccine strain, intranasal immunizations were performed with eight-week-old female BALB/c mice such that each mouse received either 109 or 108 colony forming unit (cfu). Immunization was accomplished by inoculating each nostril with 0.005 ml (5 microl) of suspension or one nostril with 0.01 ml (10 microl) of suspension, or in the case of the controls with BSG lacking any bacteria. Food and water were returned within 30 minutes following intranasal immunization. Intranasally immunized mice and non-immunized controls were orally challenged with either 108 or 109 cfu of the wild-type virulent S.typhimurium strain, X3339, 30 days after the date of intranasal immunization. The X3339 challenge strain was grown overnight. The following morning the culture was diluted 1:200 into L broth and aerated at 37 degrees C until reaching an OD600 of 0.8. The cells were concentrated by centrifugation followed by suspension in BSG. The mice to be perorally challenged were deprived of food and water for approximately 4 hours prior to the oral challenge. Mice were observed over a period of 30 days for morbidity and mortality. Intranasal administration of both the RpoS+ microbe (X8296) and the RpoS- microbe (X8308) provided some protection against challenge by the wild-type strain (X3339). The RpoS+ strain was more effective, however, in this strain provided greater protection against challenge with the wild-type strain (5 out of 16 survivors) than did the corresponding RpoS- strain (2 out of 16 survivors).
USE - (I) is useful for delivery of a desired gene product to a human by selecting for a live attenuated strain of bacteria,

and administering the strain to the human, or directly administering the live attenuated bacteria to the human. The recombinant virulence gene is capable of expressing a gene product that facilitate invasion and colonization of the gut associated lymphoid tissues. (II) is useful for immunizing a human. (III) is useful for preparing a vaccine (claimed). (I) is useful to deliver and produce pharmacological active products that stimulate or suppress various physiological functions. The live attenuated bacteria is useful in vaccines to prevent diseases caused by various bacteria, viral, fungal, and protozoal pathogens and as delivery vehicles for genes and gene products. The strains are useful as carrier microorganisms for the production of expression products encoded on recombinant genes in bacterial cells, and in safety and improved immunogenicity against recombinant antigens. ADMINISTRATION - Vaccine is administered by oral ingestion, gastric intubation or broncho-nasal-ocular spraying. No dosage details given. EXAMPLE - Construction of Salmonella strain was as follows: X3339 was a wild-type, virulent, animal-passaged isolate of S.typhimurium strain SL1344. SF1005 was an rpoS::RR10 mutant derived from S.typhimurium strain American type culture collection (ATCC) 14028s and contained an ampicillin resistance gene linked to the rpoS::RR10 mutant allele. The mutant rpoS::RR10 allele was moved into X3339 using a P22HTint transducing phage lysate prepared on SF1005 and selected for ampicillin resistance (Apr) due to the presence of the beta-lactamase gene linked to the RR10 insertion in the rpoS gene. The allelic exchange between SF1005 and X3339 was confirmed by Southern blot analysis, and the resulting 3339 rpoS::RR10 mutant derivative was designated as X4973. Transductants were screened for sensitivity to P22HTint by cross streaking with 22H5, a clear plaque mutant. Pseudolysogenic colonies were distinguished from non-lysogens on Evans blue and uranine (EBU) indicator agar. Media were supplemented with 50 microg ampicillin/ml when required to select for X4973. (53 pages)

CLASSIFICATION: PHARMACEUTICALS, Vaccines; GENETIC TECHNIQUES and APPLICATIONS, Gene Expression Techniques and Analysis; DISEASE, HIV and Other Virus Infections; DISEASE, Infectious Disease (non-viral)

CONTROLLED TERMS: PLASMID PCMV-BETA-MEDIATED SALMONELLA TYPHIMURIUM RPOS+, MUTANT PAB, PUR, ARO, ASD, DAP, NADA, PNCB, GALE, PMI, FUR, RPSL, OMPR, HTRA, HEMA, CDT, CYA, CRP, DAM, PHOP, PHOQ, RFC, POXA, GALU, METL, METH, MVIA, SODC, RECA, SSRA, SSRB, SIRA, SIRB, SIRC, INV, HILA, HILC, HILD, RPOE, FLGM, TONB, SLYA, TUMOR-ASSOCIATED ANTIGEN, AMPICILLIN-RESISTANCE GENE TRANSFER, EXPRESSION IN SALMONELLA SP., HUMAN IMMUNIZATION, SOUTHERN BLOT HYBRIDIZATION, APPL. BACTERIUM INFECTION, VIRUS INFECTION, FUNGUS INFECTION, PROTOZOON INFECTION THERAPY, ATTENUATED RECOMBINANT VACCINE ANTIBIOTIC-RESISTANCE MAMMAL ANIMAL ANTISEPTIC VIRUCIDE (22, 30)

L128 ANSWER 29 OF 39 SCISEARCH COPYRIGHT (c) 2010 The Thomson Corporation on STN

ACCESSION NUMBER: 1997:37222 SCISEARCH Full-text

THE GENUINE ARTICLE: WA729

TITLE: Display of heterologous proteins on the surface of microorganisms: From the screening of combinatorial libraries to live recombinant vaccines

AUTHOR: Georgiou G (Reprint)
CORPORATE SOURCE: UNIV TEXAS, DEPT CHEM ENGN, AUSTIN, TX 78712 (Reprint)
AUTHOR: Stathopoulos C; Daugherty P S; Nayak A R; Iverson B L; Curtiss R
CORPORATE SOURCE: WASHINGTON UNIV, DEPT BIOL, ST LOUIS, MO 63130; UNIV TEXAS, DEPT CHEM & BIOCHEM, AUSTIN, TX 78712
COUNTRY OF AUTHOR: USA
SOURCE: NATURE BIOTECHNOLOGY, (JAN 1997) Vol. 15, No. 1, pp. 29-34 .
ISSN: 1087-0156.
PUBLISHER: NATURE PUBLISHING CO, 345 PARK AVE SOUTH, NEW YORK, NY 10010-1707.
DOCUMENT TYPE: General Review; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: English
REFERENCE COUNT: 90
ENTRY DATE: Entered STN: 1997
Last Updated on STN: 1997

ABSTRACT:
In recent years there has been considerable progress towards the development of expression systems for the display of heterologous polypeptides and, to a lesser extent, oligosaccharides on the surface of bacteria or yeast. The availability of protein display vectors has in turn provided the impetus for a range of exciting technologies. Polypeptide libraries can be displayed in bacteria and screened by cell sorting techniques, thus simplifying the isolation of proteins with high affinity for ligands. Expression of antigens on the surface of nonvirulent microorganisms is an attractive approach to the development of high-efficacy recombinant live vaccines. Finally, cells displaying protein receptors or antibodies are of use for analytical applications and bioseparations.

CATEGORY: BIOTECHNOLOGY & APPLIED MICROBIOLOGY
SUPPLEMENTARY TERM: protein display; library screening; live bacterial vaccines
SUPPL. TERM PLUS: GRAM-NEGATIVE BACTERIA; RANDOM PEPTIDE LIBRARIES; MOUTH-DISEASE VIRUS; COLI CELL-SURFACE; ESCHERICHIA-COLI; OUTER-MEMBRANE; SALMONELLA-TYPHIMURIUM; IMMUNE-RESPONSES; ATTENUATED SALMONELLA; FOREIGN POLYPEPTIDES

REFERENCE(S):

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	ARN PG (RPG)	Referenced Work (RWK)
ADEY N B	1995	156	27	GENE
AGTERBERG M	1990	88	37	GENE
AGTERBERG M	1990	8	438	VACCINE
BODER E T	1996			UNPUB SURFACE DISPLA
BONNYCASTLE L L C	1996	258	747	J MOL BIOL
BROWN S	1992	89	8651	P NATL ACAD SCI USA
BURTON D R	1994	57	191	ADV IMMUNOL
CARDENAS L	1992	5	328	CLIN MICROBIOL REV
CHARBIT A	1988	70	181	GENE
CHARBIT A	1987	139	1644	J IMMUNOL
CHEN G	1996	12	572	BIOTECHNOL PROGR
CHOO Y	1994	91	11163	P NATL ACAD SCI USA
CIRILLO J D	1995	20	1001	CLIN INFECT DIS
COLAS P	1996	380	548	NATURE
CORNELIS P	1996	14	203	BIO-TECHNOL
CRAMERI A	1996	2	100	NAT MED
CURTISS R	1996		499	ESSENTIALS MUCOSAL I
CURTISS R	1990		161	NEW GENERATION VACCI

CURTISS R	1990	8	237	TRENDS BIOTECHNOL
DAUGHERTY P	1997			UNPUB ISOLATION HIGH
DUNNE M	1995	63	1611	INFECT IMMUN
FISCHETTI V A	1996	62	405	ASM NEWS
FORMAL S B	1981	34	746	INFECT IMMUN
FORTAINE A	1990	141	907	RES MICROBIOL
FRANCISCO J A	1992	89	2713	P NATL ACAD SCI USA
FRANCISCO J A	1993	90	10444	P NATL ACAD SCI USA
FREEMAN A	1996	52	625	BIOTECHNOL BIOENG
FUCHS P	1991	9	1369	BIO-TECHNOL
GEORGIOU G	1996	9	239	PROTEIN ENG
GEORGIOU G	1993	11	6	TRENDS BIOTECHNOL
GODING J W	1978	20	241	J IMMUNOL METHODS
GOLDBERG J B	1992	89	10716	P NATL ACAD SCI USA
GRIFFITHS A D	1993	12	725	EMBO J
HANSSON M	1992	174	4239	J BACTERIOL
HARRISON J L	1996	267	109	METHOD ENZYMOL
HESS J	1996	93	1458	P NATL ACAD SCI USA
HILL R H	1996	20	685	MOL MICROBIOL
HOFNUNG M	1991	34	77	METHOD CELL BIOL
JAHNSCHMID B	1996	44	225	J BIOTECHNOL
JANSSEN R	1994	12	406	VACCINE
JOSE J	1995	18	378	MOL MICROBIOL
KLAUSER T	1993	15	799	BIOESSAYS
KLAUSER T	1990	9	1991	EMBO J
KNAPPIK A	1995	8	81	PROTEIN ENG
KORNACKER M G	1990	4	1101	MOL MICROBIOL
LAUKKANEN M L	1993	6	449	PROTEIN ENG
LEARY J F	1995	2678	240	SPIE
LECLERC C	1989	7	242	VACCINE
LITTLE M	1993	11	3	TRENDS BIOTECHNOL
LOWMAN H B	1993	234	564	J MOL BIOL
LU Z J	1995	13	366	BIO-TECHNOL
MARKLAND W	1996	35	8045	BIOCHEMISTRY-US
MATTHEWS D J	1993	260	113	SCIENCE
MEDAGLINI D	1995	92	6868	P NATL ACAD SCI USA
MESSNER P	1992	233	175	CARBOHYD RES
NEWTON S M C	1996	178	3447	J BACTERIOL
NEWTON S M C	1995	146	203	RES MICROBIOL
NEWTON S M C	1989	244	70	SCIENCE
OCALLAGHAN D	1990	141	963	RES MICROBIOL
PALLESEN L	1995	141	2839	MICROBIOL-UK
POZZI G	1992	60	1902	INFECT IMMUN
PROVENCE D L	1997			UNPUB ANAL EXTRACELL
RANTAMAKI L K	1995	45	115	VET IMMUNOL IMMUNOP
RENAULDMONGENIE G	1996	93	7944	P NATL ACAD SCI USA
ROBERTS M	1994		27	NOVEL DELIVERY SYSTE
RUPPERT A	1994	12	492	VACCINE
RYD M	1992	12	399	MICROB PATHOGENESIS
SALMOND G P C	1993	18	7	TRENDS BIOCHEM SCI
SAMUELSON P	1995	177	1470	J BACTERIOL
SCHORR J	1991	9	675	VACCINE
SCHREUDER M P	1996	14	383	VACCINE
SCHREUDER M P	1993	9	399	YEAST
SCOTT J K	1990	249	386	SCIENCE
SHORT M K	1995	270	28541	J BIOL CHEM
SHREUDER M P	1996	14	115	TRENDS BIOTECHNOL
SOUSA C	1996	14	1017	NAT BIOTECHNOL
STATHOPOULOS C	1996	45	112	APPL MICROBIOL BIOT
STEIDLER L	1993	175	7639	J BACTERIOL

STEVENSON G	1985	28	317	FEMS MICROBIOL LETT
STGEME J W	1994	14	217	MOL MICROBIOL
SU G F	1992	60	3345	INFECT IMMUN
SUZUKI T	1995	270	30874	J BIOL CHEM
TANG Y	1996	271	15682	J BIOL CHEM
TAYLOR I M	1990	4	1259	MOL MICROBIOL
VANDEVERG L	1990	58	2002	INFECT IMMUN
VANDIE I	1990	222	297	MOL GEN GENET
WANG C I	1996	267	28	METHOD ENZYMOL
WHITEHORN E A	1995	13	1215	BIO-TECHNOL
WONG R S Y	1995	158	55	GENE
YANG W P	1995	254	392	J MOL BIOL

L128 ANSWER 30 OF 39 SCISEARCH COPYRIGHT (c) 2010 The Thomson Corporation on STN

ACCESSION NUMBER: 1991:17834 SCISEARCH Full-text
THE GENUINE ARTICLE: EQ001
TITLE: CONTROL OF COLONIZATION BY VIRULENT SALMONELLA-TYPHIMURIUM BY ORAL IMMUNIZATION OF CHICKENS WITH AVIRULENT DELTA-CYA DELTA-CRP SALMONELLA-TYPHIMURIUM
AUTHOR: HASSAN J O (Reprint); CURTISS R
CORPORATE SOURCE: WASHINGTON UNIV, DEPT BIOL, ST LOUIS, MO 63130
COUNTRY OF AUTHOR: USA
SOURCE: RESEARCH IN MICROBIOLOGY, (SEP-OCT 1990) Vol. 141, No. 7-8, pp. 839-850.
ISSN: 0923-2508.
PUBLISHER: EDITIONS SCIENTIFIQUES ELSEVIER, 141 RUE JAVEL, 75747 PARIS CEDEX 15, FRANCE.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 34
ENTRY DATE: Entered STN: 1994
Last Updated on STN: 1994

ABSTRACT:

Oral immunization with a DELTA-cya DELTA-crp Salmonella ***typhimurium*** strain has been shown to preclude colonization by wild-type, virulent S. typhimurium and induces humoral and cellular immune response in chickens. Intestinal tract colonization by the virulent challenge strain was used to determine the level of protection conferred by immunization with the DELTA-cya DELTA-crp mutant. The associated humoral and cellular immune responses were measured by ELISA and delayed-type hypersensitivity (DTH) tests, respectively. The levels of colonization by both Salmonella strains were determined by enumeration of viable cells in the intestinal tract. A reduction in faecal excretion of the wild-type strain was observed with a single oral immunization with the DELTA-cya DELTA-crp ***mutant*** , but caecal colonization was not affected. However, double oral immunization with the DELTA-cya DELTA-crp mutant precludes caecal colonization by the virulent strain. IgM, IgA and IgG were detected against sonicated Salmonella whole-cell antigens. Outer ***membrane*** and flagella proteins induced DTH responses, whereas lipopolysaccharide failed to do so. The effectiveness of the DELTA-cya DELTA-crp strain in reducing caecal colonization by the highly virulent challenge strain in chickens demonstrates that oral vaccination with the DELTA-cya DELTA-crp S. typhimurium should aid in eliminating Salmonella carriers in chickens. The elimination of these carriers on the poultry farm should help to control Salmonella contamination of poultry products, thereby improving public health.

CATEGORY: MICROBIOLOGY

SUPPLEMENTARY TERM: SALMONELLA-TYPHIMURIUM; IMMUNIZATION; COLONIZATION; IMMUNE RESPONSES; CHICKENS; VACCINE
SUPPL. TERM PLUS: INFECTED CHICKENS; CECAL MICROFLORA; FECAL EXCRETION; IMMUNITY; MUTANTS; RESISTANCE; PROTECTION; VACCINES

REFERENCE(S):

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	ARN PG (RPG)	Referenced Work (RWK)
BARROW, P A	1988	17	571	AVIAN PATHOL
BARROW, P A	1990	104	413	EPIDEMIOL INFECT
BARROW, P A	1987	42	194	RES VET SCI
BROWN, D D	1975	18	165	RES VET SCI
COLLINS, F M	1974	38	371	BACTERIOL REV
CURTISS, R	1990			IN PRESS COLONIZATIO
CURTISS, R	1968	58	9	INFECT IMMUN
CURTISS, R	1965	89	28	J BACTERIOL
DAVIS, R W	1980			MANUAL GENETIC ENG A
DORMAN, C J	1989	57	2136	INFECT IMMUN
GALAN, J E	1989	6	433	MICROB PATHOGENESIS
GERMANIER, R	1971	4	663	INFECT IMMUN
HASSAN, J O	1990			IN PRESS COLONIZATIO
HASSAN, J O	1990	126	519	VET REC
HOISETH, S K	1981	291	238	NATURE
IMPEY, C S	1989	66	469	J APPL BACTERIOL
KITA, E	1984	87	528	CELL IMMUNOL
KITA, E	1987	61	535	IMMUNOLOGY
LEIFSON, E	1936	24	4423	AM J HYG
LENNOX, E S	1955	1	190	VIROLOGY
LOCKMAN, H A	1990	58	137	INFECT IMMUN
LURIA, S E	1957	74	461	J BACTERIOL
MALOY, S R	1981	145	1110	J BACTERIOL
MILES, A A	1938	38	732	J HYG CAMB
NEWELL, D G	1984	130	1201	J GEN MICROBIOL
ROBERTSSON, J A	1982	33	221	RES VET SCI
SCHMIEGER, H	1972	119	75	MOL GEN GENET
SEUNA, E	1979	58	1171	POULTRY SCI
SMITH, H W	1975	75	275	J HYG CAMB
SMITH, H W	1980	84	479	J HYG-CAMBRIDGE
SMYSER, C F	1966	10	314	AVIAN DIS
THAIN, J A	1978	102	143	VET REC
WIERUP, M	1985		94	P INT S SALMONELLA N
WILLIAMS, J E	1978		135	DISEASES POULTRY

L128 ANSWER 31 OF 39 EMBASE COPYRIGHT (c) 2010 Elsevier B.V. All rights reserved on STN

ACCESSION NUMBER: 2010424137 EMBASE Full-text
TITLE: Live recombinant Salmonella typhi vaccines constructed to investigate the role of rpoS in eliciting immunity to a heterologous antigen.
AUTHOR: Shi, Huoying; Santander, Javier; Brenneman, Karen E.; Wanda, Soo-Young; Wang, Shifeng; Senechal, Patti; Sun, Wei; Roland, Kenneth L.; Curtiss III, Roy
CORPORATE SOURCE: Center for Infectious Diseases and Vaccinology, The Biodesign Institute and School of Life Sciences, Arizona State University, Tempe, AZ, United States. rcurtiss@asu.edu
AUTHOR: Curtiss, R. (correspondence)
CORPORATE SOURCE: Center for Infectious Diseases and Vaccinology, The Biodesign Institute and School of Life Sciences, Arizona

State University, Tempe, AZ, United States. rcurtiss@asu.edu
SOURCE: PLoS ONE, (2010) Vol. 5, No. 6. arn. e11142.
Refs: 103
E-ISSN: 1932-6203
PUBLISHER: Public Library of Science, 185 Berry Street, Suite 1300, San Francisco, CA 94107, United States.
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 026 Immunology, Serology and Transplantation
037 Drug Literature Index
LANGUAGE: English
SUMMARY LANGUAGE: English
ENTRY DATE: Entered STN: 30 Aug 2010
Last Updated on STN: 15 Nov 2010

ABSTRACT: We hypothesized that the immunogenicity of live Salmonella enterica serovar Typhi vaccines expressing heterologous antigens depends, at least in part, on its rpoS status. As part of our project to develop a recombinant ***attenuated*** S. Typhi vaccine (RASTyV) to prevent pneumococcal diseases in infants and children, we constructed three RASTyV strains synthesizing the Streptococcus pneumoniae surface protein PspA to test this hypothesis. Each vector strain carried ten engineered mutations designed to optimize safety and immunogenicity. Two S. Typhi vector strains (x9639 and x9640) were derived from the rpoS mutant strain Ty2 and one (x9633) from the RpoS+ strain ISP1820. In x9640, the nonfunctional rpoS gene was replaced with the functional rpoS gene from ISP1820. Plasmid pYA4088, encoding a secreted form of PspA, was moved into the three vector strains. The resulting RASTyV strains were evaluated for safety in vitro and for immunogenicity in mice. All three RASTyV strains were similar to the live attenuated typhoid vaccine Ty21a in their ability to survive in human blood and human monocytes. They were more sensitive to complement and were less able to survive and persist in sewage and surface water than their wild-type counterparts. Adult mice intranasally immunized with any of the RASTyV strains developed immune responses against PspA and Salmonella antigens. The RpoS+ vaccines induced a balanced Th1/Th2 immune response while the RpoS- strain x9639(pYA4088) induced a strong Th2 immune response. Immunization with any RASTyV provided protection against S. pneumoniae challenge; the RpoS+ strain x9640(pYA4088) provided significantly greater protection than the ISP1820 derivative, x9633(pYA4088). In the pre-clinical setting, these strains exhibited a desirable balance between safety and immunogenicity and are currently being evaluated in a Phase 1 clinical trial to determine which of the three RASTyVs has the optimal safety and immunogenicity profile in human hosts. .COPYRGT. 2010 Shi et al.

CONTROLLED TERM: Medical Descriptors:
animal experiment
animal model
antigen expression
article
bacterial gene
bacterial strain
bacterial survival
bacterium mutant
blood
cellular immunity
complement system
controlled study
drug safety
female
hypothesis
immunization

*immunogenicity
male
monocyte
newborn
nonhuman
plasmid
pneumococcal infection
Salmonella typhi
serotype
sewage
Th1 cell
Th2 cell

CONTROLLED TERM: Drug Descriptors:
bacterial antigen
membrane protein
recombinant vaccine
*sigma factor RpoS
Streptococcus antigen
surface water
*typhoid vaccine: NA, intranasal drug administration
*typhoid vaccine: PO, oral drug administration

L128 ANSWER 32 OF 39 EMBASE COPYRIGHT (c) 2010 Elsevier B.V. All rights reserved on STN

ACCESSION NUMBER: 2010492342 EMBASE Full-text
TITLE: Delivery of woodchuck hepatitis virus-like particle presented influenza M2e by recombinant attenuated Salmonella displaying a delayed lysis phenotype.
AUTHOR: Ameiss, Keith; Ashraf, Shamaila; Kong, Wei; Curtiss, Roy (correspondence)
CORPORATE SOURCE: The Biodesign Institute, Center for Infectious Diseases and Vaccinology, Arizona State University, Tempe, AZ 85287, United States. rcurtiss@asu.edu
AUTHOR: Curtiss, Roy (correspondence)
CORPORATE SOURCE: School of Life Sciences, Arizona State University, Tempe, AZ 85287, United States. rcurtiss@asu.edu
AUTHOR: Pekosz, Andrew; Wu, Wai-Hong
CORPORATE SOURCE: Harry Feinstone Dept. of Molecular Microbiology and Immunology, Johns Hopkins Univ. Bloomberg School of Public Health, 615 North Wolfe Street, Suite E5132, Baltimore, MD 21205-2103, United States.
AUTHOR: Milich, David; Billaud, Jean-Noel
CORPORATE SOURCE: The Vaccine Research Institute of San Diego, 10835 Road to the Cure, Suite 150, San Diego, CA 92121, United States.
AUTHOR: Billaud, Jean-Noel
CORPORATE SOURCE: Ingenuity Systems, Redwood City, CA, United States.
AUTHOR: Ameiss, Keith
CORPORATE SOURCE: Pfizer Animal Health, Poultry Health Division, Durham, NC, United States.
AUTHOR: Curtiss, Roy (correspondence)
CORPORATE SOURCE: The Biodesign Institute, Arizona State University, P. O. Box 875401, Tempe, AZ 85287-5401, United States. rcurtiss@asu.edu
SOURCE: Vaccine, (September 2010) Vol. 28, No. 41, pp. 6704-6713. Refs: 56
ISSN: 0264-410X CODEN: VACCDE
PUBLISHER: Elsevier Ltd, Langford Lane, Kidlington, Oxford, OX5 1GB, United Kingdom.
PUBLISHER IDENT.: S 0264-410X(10)01105-9
COUNTRY: United Kingdom

DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology: Bacteriology, Mycology, Parasitology and Virology
005 General Pathology and Pathological Anatomy
026 Immunology, Serology and Transplantation
037 Drug Literature Index
LANGUAGE: English
SUMMARY LANGUAGE: English
ENTRY DATE: Entered STN: 6 Oct 2010
Last Updated on STN: 6 Oct 2010

ABSTRACT: The use of live recombinant attenuated Salmonella vaccines (RASV) is a promising approach for controlling infections by multiple pathogens. The highly conserved extracellular domain of the influenza M2 protein (M2e) has been shown to provide broad spectrum protection against multiple influenza subtypes sharing similar M2e sequences. An M2e epitope common to a number of avian influenza subtypes was inserted into the core antigen of woodchuck hepatitis virus and expressed in two different recombinant ***attenuated*** Salmonella Typhimurium strains. One strain was ***attenuated*** via deletion of the cya and crp genes. The second strain was engineered to exhibit a programmed delayed lysis phenotype. Both strains were able to produce both monomeric fusion proteins and fully assembled core particles. Mice orally immunized with the strain exhibiting delayed lysis induced significantly greater antibody titers than the Δcya Δcrp strain and provided moderate protection against weight loss to a low level challenge with the influenza strain A/WSN/33 modified to express the M2e sequence common to avian viruses. Further studies indicated that the Salmonella expressed core antigen induced comparable antibody levels to the purified core antigen injected with an alum adjuvant and that both are able to reduce viral replication in the lungs. To our knowledge this is the first report demonstrating Salmonella-mediated delivery of influenza virus M2e protein in a mammalian host to induce a protective immune response against viral challenge. .COPYRGT. 2010 Elsevier Ltd.

CONTROLLED TERM: Medical Descriptors:
animal experiment
animal model
antibody titer
article
avian influenza: DT, drug therapy
bacterial gene
bacterial strain
controlled study
crp gene
cya gene
DNA modification
gene deletion
genetic engineering
immune response
lysis
mouse
nonhuman
phenotype
priority journal
protein expression
*Salmonella
Salmonella typhimurium
sequence analysis
viral gene delivery system
virus like agent
virus replication

*Woodchuck hepatitis virus
CONTROLLED TERM: Drug Descriptors:
aluminum potassium sulfate
epitope
hybrid protein
*protein M2: DT, drug therapy
*recombinant attenuated salmonella vaccine: DT, drug therapy
*salmonellosis vaccine: DT, drug therapy
unclassified drug
SUPPLEMENTARY TERM: Influenza; M2e; RASV; Salmonella; Virus-like particle
CAS REGISTRY NO.: (aluminum potassium sulfate) 10043-67-1

L128 ANSWER 33 OF 39 EMBASE COPYRIGHT (c) 2010 Elsevier B.V. All rights reserved on STN
ACCESSION NUMBER: 2010436326 EMBASE Full-text
TITLE: Regulated delayed expression of rfc enhances the immunogenicity and protective efficacy of a heterologous antigen delivered by live attenuated Salmonella enterica vaccines.
AUTHOR: Kong, Qingke; Liu, Qing; Jansen, Angela M.; Curtiss, Roy (correspondence)
CORPORATE SOURCE: Center for Infectious Diseases and Vaccinology, The Biodesign Institute and School of Life Sciences, Arizona State University, Tempe, AZ 85287, United States. rcurtiss@asu.edu
AUTHOR: Curtiss, Roy (correspondence)
CORPORATE SOURCE: Center for Infectious Diseases and Vaccinology, The Biodesign Institute, Arizona State University, PO Box 875401, 1001 S. McAllister Avenue, Tempe, AZ 85287-5401, United States. rcurtiss@asu.edu
SOURCE: Vaccine, (August 2010) Vol. 28, No. 37, pp. 6094-6103. Refs: 50
ISSN: 0264-410X CODEN: VACCDE
PUBLISHER: Elsevier Ltd, Langford Lane, Kidlington, Oxford, OX5 1GB, United Kingdom.
PUBLISHER IDENT.: S 0264-410X(10)00902-3
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology: Bacteriology, Mycology, Parasitology and Virology
030 Clinical and Experimental Pharmacology
037 Drug Literature Index
LANGUAGE: English
SUMMARY LANGUAGE: English
ENTRY DATE: Entered STN: 2 Sep 2010
Last Updated on STN: 2 Sep 2010

ABSTRACT: The Salmonella rfc gene encodes the O-antigen polymerase. We constructed three strains in which we replaced the native rfc promoter with the arabinose-dependent araC PBAD promoter so that rfc expression was dependent on exogenously supplied arabinose provided during in vitro growth. The three mutant strains were designed to synthesize different amounts of Rfc by altering the ribosome-binding sequence and start codon. We examined these strains for a number of in vitro characteristics compared to an isogenic Δrfc mutant and the wild-type parent strain. One promoter-replacement mutation, ΔPrfc174, yielded an optimal profile, exhibiting wild-type characteristics when grown with arabinose, and Δrfc characteristics when grown without arabinose. In addition, when administered orally, the ΔPrfc174 strain was completely attenuated in for virulence in

mice. The ΔPrfc174 mutation was introduced into attenuated Salmonella vaccine strain χ9241 (ΔpabA ΔpabB ΔasdA) followed by introduction of an Asd+ balanced-lethal plasmid to designed for expression of the pneumococcal surface protein PspA. Mice immunized with either χ9241 or its ΔPrfc174 derivative expressing pspA were protected against S. pneumoniae challenge. .COPYRGT. 2010.

CONTROLLED TERM: Medical Descriptors:
animal experiment
animal model
animal tissue
article
bacterial mutation
bacterial strain
bacterial virulence
bacterium mutant
codon
controlled study
drug delivery system
drug efficacy
female
immunogenicity
in vitro study
microbial attenuation
mouse
nonhuman
plasmid
*pneumococcal infection
priority journal
protein expression
ribosome
*Salmonella enterica
*salmonellosis
Streptococcus pneumoniae
CONTROLLED TERM: Drug Descriptors:
arabinose
*bacterial protein
*pneumococcal surface protein
*protein RFC
*typhoid vaccine: PO, oral drug administration
*typhoid vaccine: PD, pharmacology
unclassified drug
SUPPLEMENTARY TERM: Arabinose-regulated rfc expression; PspA
CAS REGISTRY NO.: (arabinose) 147-81-9

L128 ANSWER 34 OF 39 EMBASE COPYRIGHT (c) 2010 Elsevier B.V. All rights reserved on STN
ACCESSION NUMBER: 2010438288 EMBASE Full-text
TITLE: Evaluation of the humoral immune response in mice orally vaccinated with live recombinant attenuated Salmonella enterica delivering a secreted form of Yersinia pestis PsaA.
AUTHOR: Torres-Escobar, Ascencion; Juarez-Rodriguez, Maria Dolores; Branger, Christine G.; Curtiss, Roy (correspondence)
CORPORATE SOURCE: Center for Infectious Disease and Vaccinology, Biodesign Institute and School of Life Sciences, Arizona State University, Tempe, AZ 85287-5401, United States. rcurtiss@asu.edu

AUTHOR: Curtiss, Roy (correspondence)
CORPORATE SOURCE: The Biodesign Institute, Center for Infectious Diseases and Vaccinology, Arizona State University, PO Box 875401, 1001 S. McAllister Avenue, Tempe, AZ 85287-5401, United States. rcurtiss@asu.edu
SOURCE: Vaccine, (August 2010) Vol. 28, No. 36, pp. 5810-5816. Refs: 55
ISSN: 0264-410X CODEN: VACCDE
PUBLISHER: Elsevier Ltd, Langford Lane, Kidlington, Oxford, OX5 1GB, United Kingdom.
PUBLISHER IDENT.: S 0264-410X(10)00898-4
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology: Bacteriology, Mycology, Parasitology and Virology
026 Immunology, Serology and Transplantation
037 Drug Literature Index
LANGUAGE: English
SUMMARY LANGUAGE: English
ENTRY DATE: Entered STN: 30 Aug 2010
Last Updated on STN: 30 Aug 2010

ABSTRACT: Yersinia pestis PsaA is an adhesin that is synthesized inside macrophages. Here, we evaluated the immune profile of codon-optimized Y. pestis PsaA synthesized in a live recombinant attenuated Salmonella vaccine (RASV) strain χ9558. Oral immunization of BALB/c mice with χ9558(pYA3705) delivering a secreted form of PsaA, elicited a systemic PsaA-specific immunoglobulin G (IgG) response but offered limited protection against lethal challenge with the intranasally introduced Y. pestis CO92 strain. Our results suggest that appropriate fine-tuning of Y. pestis PsaA delivery by RASV could improve its protective role in curtailing plague colonization and infection. .COPYRGT. 2010 Elsevier Ltd.

CONTROLLED TERM: Medical Descriptors:
animal experiment
antibody production
article
bacterial colonization
bacterial strain
codon
controlled study
female
*humoral immunity
indel mutation
mouse
mucosal immunity
nonhuman
priority journal
protection
protein stability
Salmonella typhimurium
survival
Yersinia pestis
*yersiniosis: DT, drug therapy
*yersiniosis: PC, prevention
CONTROLLED TERM: Drug Descriptors:
*bacterial protein: DV, drug development
*bacterial protein: DT, drug therapy
*bacterial protein: PO, oral drug administration
*bacterial protein: PD, pharmacology
*bacterial vaccine: DT, drug therapy

*bacterial vaccine: PO, oral drug administration
*bacterial vaccine: PD, pharmacology
immunoglobulin A antibody: EC, endogenous compound
immunoglobulin G1 antibody: EC, endogenous compound
immunoglobulin G2a antibody: EC, endogenous compound
*live vaccine: DT, drug therapy
*live vaccine: PO, oral drug administration
*live vaccine: PD, pharmacology
*protein psaa: DV, drug development
*protein psaa: DT, drug therapy
*protein psaa: PO, oral drug administration
*protein psaa: PD, pharmacology
unclassified drug
SUPPLEMENTARY TERM: Asd+; Codon-optimized; PsaA antigen; PsaB chaperone protein; PsaC usher protein; Vaccine plasmid

L128 ANSWER 35 OF 39 EMBASE COPYRIGHT (c) 2010 Elsevier B.V. All rights reserved on STN
ACCESSION NUMBER: 0011858870 EMBASE Full-text
COPYRIGHT: MEDLINE® is the source for the citation and abstract of this record.
TITLE: Immunogenicity of chi4127 phoP- Salmonella enterica serovar Typhimurium in dogs..
AUTHOR: McVey, D Scott (correspondence); Chengappa, M.M.; Mosier, Derek E; Stone, Gregory G; Oberst, Richard D; Sylte, Matt J; Gabbert, Nathan M; Kelly-Aehle, Sandra M; Curtiss, Roy
CORPORATE SOURCE: Department of Diagnostic Medicine and Pathobiology, College of Veterinary Medicine, Kansas State University, Manhattan, KS 66506, USA.. d_scott_mcvey@groton.pfizer.com
SOURCE: Vaccine, (22 Feb 2002) Vol. 20, No. 11-12, pp. 1618-1623. ISSN: 0264-410X
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: MEDLINE
LANGUAGE: English
ENTRY DATE: Entered STN: Mar 2010
Last Updated on STN: Mar 2010

ABSTRACT: Salmonellae are commonly isolated from dogs. The number of dogs infected with Salmonella spp. is surprisingly high and greater than the incidence of clinical disease would suggest. Salmonellosis is common in greyhound kennels. Morbidity can approach 100% in puppies and the mortality ranges to nearly 40%. To date, there has been little effort to evaluate the feasibility of a vaccine for control of this disease in dogs. In the studies described here, an attenuated strain of Salmonella enterica serovar Typhimurium (Se Typhimurium), chi4127, was capable of establishing a limited infection in dogs. The chi4127-attenuated salmonellae efficiently stimulated protective immune responses in serotype homologous, direct, oral challenge experiments. Morbidity in the wild-type-challenged dogs was 8.3% in immunized dogs but 100% in the non-vaccinated controls. In (9/12) control dogs, the disease involved both gastrointestinal and respiratory tracts with high fever (>40.2 degrees C) that persisted through 5 days after challenge. Serum IgG response against S. typhimurium lipopolysaccharide (LPS) significantly increased (P<0.01) in vaccinated dogs and in non-vaccinated dogs after challenge. The non-vaccinated dogs had 3 to 4 logs higher numbers of Se Typhimurium in splenic and hepatic tissue than did the vaccinated dogs. This particular attenuated strain has potential for use as a vaccine for canine salmonellosis.

CONTROLLED TERM: Medical Descriptors:

animal
animal disease
*animal salmonellosis: PC, prevention
article
blood
classification
dog
gastrointestinal disease: PC, prevention
immunology
isolation and purification
mucosal immunity
respiratory tract disease: PC, prevention
*Salmonella typhimurium
serotyping
CONTROLLED TERM: Drug Descriptors:
bacterium antibody
immunoglobulin G
live vaccine: PD, pharmacology
salmonellosis vaccine: PD, pharmacology
CAS REGISTRY NO.: (immunoglobulin G) 97794-27-9

L128 ANSWER 36 OF 39 EMBASE COPYRIGHT (c) 2010 Elsevier B.V. All rights reserved on STN
ACCESSION NUMBER: 0011348727 EMBASE Full-text
COPYRIGHT: MEDLINE® is the source for the citation and abstract of this record.
TITLE: Intranasal immunogenicity of a Deltacya Deltacrp-pabA mutant of Salmonella enterica serotype Typhimurium for the horse..
AUTHOR: Sheoran, A.S. (correspondence); Timoney, J.F.; Tinge, S.A.; Sundaram, P.; Curtiss, R.
CORPORATE SOURCE: Department of Veterinary Science, Gluck Equine Research Center, University of Kentucky, 40546-0099, Lexington, KY, USA.
SOURCE: Vaccine, (14 May 2001) Vol. 19, No. 25-26, pp. 3591-3599. ISSN: 0264-410X
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: MEDLINE
LANGUAGE: English
ENTRY DATE: Entered STN: Mar 2010
Last Updated on STN: Mar 2010
ABSTRACT: The aim of this study was to investigate the intranasal immunogenicity for the horse of a Deltacya Deltacrp-pabA mutant (MGN-707) of Salmonella enterica serotype Typhimurium (S. typhimurium). MGN-707 caused no sign of disease, was not detected in feces and a single administration induced strong Salmonella-specific serum and nasal mucosal antibody responses. All ponies had made strong salmonella specific serum IgGa, IgGb, IgA and IgM antibody responses by day 25 after the first immunization. IgM responses to salmonella lipopolysaccharide (LPS) were short lived whereas salmonella specific serum IgGa and IgGb persisted at high levels in all ponies until 83 and 140 days, respectively. Specific nasal mucosal antibody responses dominated by IgA and IgM were evident by day 25 in all ponies except one in which only specific IgGa and IgGb were evident. Specific nasal mucosal IgA persisted in most ponies until day 69. A second immunization on day 140 boosted antibody responses, and stimulated a strong nasal mucosal IgA response in the pony that failed to make an IgA response after primary immunization. At the termination of the experiment, IgA and IgGb dominated jejunal antibody responses whereas vaginal responses were mainly IgA. The latter response unequivocally confirms the existence of a common mucosal immune system in

equids. The results indicate that a S. typhimurium Deltacya Deltacrp-pabA mutant has potential as an intranasal vaccine against salmonellosis in the horse.

CONTROLLED TERM: Medical Descriptors:
animal
animal salmonellosis: PC, prevention
article
bacterial gene
biosynthesis
blood
feces
female
gene deletion
genetics
horse
horse disease: PC, prevention
immunology
intranasal drug administration
microbiology
mucosal immunity
mutation
nucleotide sequence
*Salmonella typhimurium
vagina
CONTROLLED TERM: Drug Descriptors:
adenylate cyclase
bacterial protein
*bacterial vaccine: AD, drug administration
bacterium antibody
cyclic AMP receptor
*Escherichia coli protein
*lyase
PabA protein, E coli
primer DNA
CAS REGISTRY NO.: (adenylate cyclase) 9012-42-4; (lyase) 9055-04-3

L128 ANSWER 37 OF 39 EMBASE COPYRIGHT (c) 2010 Elsevier B.V. All rights reserved on STN
ACCESSION NUMBER: 0007958478 EMBASE Full-text
COPYRIGHT: MEDLINE® is the source for the citation and abstract of this record.
TITLE: Recombinant Salmonella vectors in vaccine development..
AUTHOR: Curtiss 3rd., R.; Kelly, S.M.; Tinge, S.A.; Tacket, C.O.; Levine, M.M.; Srinivasan, J.; Koopman, M.
CORPORATE SOURCE: Washington University, Department of Biology, St. Louis, MO..
AUTHOR: Curtiss, P. (correspondence)
CORPORATE SOURCE: Washington University, Department of Biology, St. Louis, MO..
SOURCE: Developments in biological standardization, (1994) Vol. 82, pp. 23-33.
Refs: 46
ISSN: 0301-5149
COUNTRY: Switzerland
DOCUMENT TYPE: Journal; General Review; (Review)
FILE SEGMENT: MEDLINE
LANGUAGE: English
ENTRY DATE: Entered STN: Mar 2010
Last Updated on STN: Mar 2010

ABSTRACT: A diversity of means are available for the attenuation of Salmonella which can be used to immunize animals and humans orally to elicit mucosal, humoral and cellular immune responses. Avirulent Salmonellae can be genetically engineered to express foreign antigens and the recombinant avirulent Salmonellae are capable of stable, high-level expression of the foreign antigen in the orally immunized animal or human host. The resulting vaccines are safe, efficacious, and are easy and economical to use.

CONTROLLED TERM: Medical Descriptors:
animal
*animal salmonellosis: PC, prevention
bacterial gene
biosynthesis
gene deletion
*gene vector
genetic engineering
genetics
human
immunology
oral drug administration
pathogenicity
review
*Salmonella
*salmonellosis: PC, prevention
virulence

CONTROLLED TERM: Drug Descriptors:
bacterial antigen
*bacterial vaccine: AD, drug administration
bacterium antibody
live vaccine
*recombinant vaccine: AD, drug administration
typhoid paratyphoid vaccine: AD, drug administration

L128 ANSWER 38 OF 39 EMBASE COPYRIGHT (c) 2010 Elsevier B.V. All rights reserved on STN

ACCESSION NUMBER: 0002692430 EMBASE Full-text
COPYRIGHT: MEDLINE® is the source for the citation and abstract of this record.
TITLE: Stable recombinant avirulent Salmonella vaccine strains..
AUTHOR: Curtiss 3rd., R.; Kelly, S.M.; Gulig, P.A.; Nakayama, K.
CORPORATE SOURCE: Department of Biology, Washington University, St. Louis, MO 63130..
AUTHOR: Curtiss, R. (correspondence)
CORPORATE SOURCE: Department of Biology, Washington University, St. Louis, MO 63130..
SOURCE: Advances in experimental medicine and biology, (1989) Vol. 251, pp. 33-47.
Refs: 40
ISSN: 0065-2598
COUNTRY: United States
DOCUMENT TYPE: Journal; General Review; (Review)
FILE SEGMENT: MEDLINE
LANGUAGE: English
ENTRY DATE: Entered STN: Mar 2010
Last Updated on STN: Mar 2010
CONTROLLED TERM: Medical Descriptors:
animal
chromosome deletion
genetics
human

immunology
molecular cloning
pathogenicity
plasmid
review
*Salmonella
species difference
CONTROLLED TERM: Drug Descriptors:
adenylate cyclase
bacterial antigen
*bacterial vaccine
cyclic AMP receptor
live vaccine
*recombinant vaccine
*vaccine
CAS REGISTRY NO.: (adenylate cyclase) 9012-42-4

L128 ANSWER 39 OF 39 EMBASE COPYRIGHT (c) 2010 Elsevier B.V. All rights reserved on STN
ACCESSION NUMBER: 0003291452 EMBASE Full-text
COPYRIGHT: MEDLINE® is the source for the citation and abstract of this record.
TITLE: Avirulent Salmonella typhimurium delta cya delta crp oral vaccine strains expressing a streptococcal colonization and virulence antigen..
AUTHOR: Curtiss 3rd., R.; Goldschmidt, R.M.; Fletchall, N.B.; Kelly, S.M.
CORPORATE SOURCE: Department of Biology, Washington University, St. Louis, MO 63130..
AUTHOR: Curtiss, R. (correspondence)
CORPORATE SOURCE: Department of Biology, Washington University, St. Louis, MO 63130..
SOURCE: Vaccine, (Apr 1988) Vol. 6, No. 2, pp. 155-160.
Refs: 41
ISSN: 0264-410X
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; General Review; (Review)
FILE SEGMENT: MEDLINE
LANGUAGE: English
ENTRY DATE: Entered STN: Mar 2010
Last Updated on STN: Mar 2010

ABSTRACT: Salmonella typhimurium SR-11 strains lacking adenylate cyclase and the cyclic AMP receptor protein (CRP) due to deletion (delta) mutations in the cya and crp genes, respectively, are avirulent for mice and induce high level protective immunity against subsequent challenge with wild-type virulent S. typhimurium SR-11 cells. The avirulence of these delta cya delta crp mutants has been enhanced by elimination of the 100 kb virulence plasmid pStSR100 without impairing immunogenicity. The present report confirms the avirulence and immunogenicity of these mutant strains, demonstrates that immunization of both four- and eight-week-old mice has no adverse effect on weight gain, and that immunity lasts at least ninety days following initial immunization. Avirulent S. typhimurium strains have been endowed with the ability to produce several streptococcal colonization and virulence antigens for the purpose of constructing recombinant bivalent oral vaccine strains. Important antigenic determinants of the Streptococcus sobrinus surface protein antigen A (SpaA), presumed to be a critical colonization antigen of S. sobrinus, are expressed at high level by the delta cya delta crp S. typhimurium strains. The recombinant vaccine strains are stable in vitro and in animals (for a period of at least eight days) where they localize to the gut-associated lymphoid tissue (GALT).

CONTROLLED TERM: Medical Descriptors:
animal
bacterium transformation
Bagg albino mouse
female
genetics
immunology
isolation and purification
molecular genetics
mouse
nucleotide sequence
oral drug administration
pathogenicity
plasmid
review
*Salmonella typhimurium
virulence

CONTROLLED TERM: Drug Descriptors:
bacterial antigen
*bacterial vaccine
live vaccine
recombinant vaccine

TEXT SEARCH

```
=> fil pascal biotechno wpix biosis dissabs lifesci esbio biotechds bioeng
scisearch
FILE 'PASCAL' ENTERED AT 10:05:33 ON 30 NOV 2010
Any reproduction or dissemination in part or in full,
by means of any process and on any support whatsoever
is prohibited without the prior written agreement of INIST-CNRS.
COPYRIGHT (C) 2010 INIST-CNRS. All rights reserved.

FILE 'BIOTECHNO' ENTERED AT 10:05:33 ON 30 NOV 2010
COPYRIGHT (C) 2010 Elsevier Science B.V., Amsterdam. All rights reserved.

FILE 'WPIX' ENTERED AT 10:05:33 ON 30 NOV 2010
COPYRIGHT (C) 2010 THOMSON REUTERS

FILE 'BIOSIS' ENTERED AT 10:05:33 ON 30 NOV 2010
Copyright (c) 2010 The Thomson Corporation

FILE 'DISSABS' ENTERED AT 10:05:33 ON 30 NOV 2010
COPYRIGHT (C) 2010 ProQuest Information and Learning Company; All Rights Reserved.

FILE 'LIFESCI' ENTERED AT 10:05:33 ON 30 NOV 2010
COPYRIGHT (C) 2010 Cambridge Scientific Abstracts (CSA)

FILE 'ESBIOBASE' ENTERED AT 10:05:33 ON 30 NOV 2010
COPYRIGHT (C) 2010 Elsevier Science B.V., Amsterdam. All rights reserved.

FILE 'BIOTECHDS' ENTERED AT 10:05:33 ON 30 NOV 2010
COPYRIGHT (C) 2010 THOMSON REUTERS

FILE 'BIOENG' ENTERED AT 10:05:33 ON 30 NOV 2010
COPYRIGHT (C) 2010 Cambridge Scientific Abstracts (CSA)

FILE 'SCISEARCH' ENTERED AT 10:05:33 ON 30 NOV 2010
Copyright (c) 2010 The Thomson Corporation

=> d que l111; d que l113; d que l116

L99      249856 SEA SALMONELLA
L100          8 SEA ((ARACP OR ARA CP)(W) BAD OR ARACPBAD OR ARA CPBAD)
L111          8 SEA L99 AND L100


L99      249856 SEA SALMONELLA
L101       1088 SEA FUR GENE#
L102       1719 SEA FERRIC UPTAKE REGULAT?
L103      13365 SEA O(W) ANTIGEN#
L112        173 SEA L99 AND (L101 OR L102)
L113          4 SEA L103 AND L112


L99      249856 SEA SALMONELLA
L101       1088 SEA FUR GENE#
L102       1719 SEA FERRIC UPTAKE REGULAT?
L104    2667600 SEA MUTAT? OR MUTANT#
L109     751214 SEA ATTENUAT?
L115      89324 SEA OUTER MEMBRANE
L116          7 SEA L99 AND (L101 OR L102) AND (L104 OR L109) AND L115
```

```
=> s l111,l113,l116 not l126

L129        12 (L111 OR L113 OR L116) NOT L126        L126=INVENTOR SEARCH

=> fil capl; d que l4; d que l8; d que l12; d que l18; d que l19; d que l21

FILE 'CAPLUS' ENTERED AT 10:05:37 ON 30 NOV 2010
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2010 AMERICAN CHEMICAL SOCIETY (ACS)


Copyright of the articles to which records in this database refer is
held by the publishers listed in the PUBLISHER (PB) field (available
for records published or updated in Chemical Abstracts after December
26, 1996), unless otherwise indicated in the original publications.
The CA Lexicon is the copyrighted intellectual property of the
American Chemical Society and is provided to assist you in searching
databases on STN.  Any dissemination, distribution, copying, or storing
of this information, without the prior written consent of CAS, is
strictly prohibited.

FILE COVERS 1907 - 30 Nov 2010  VOL 153 ISS 23
FILE LAST UPDATED: 29 Nov 2010  (20101129/ED)
REVISED CLASS FIELDS (/NCL) LAST RELOADED:  Aug 2010
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE:  Aug 2010

CAplus now includes complete International Patent Classification (IPC)
reclassification data for the fourth quarter of 2010.

CAS Information Use Policies apply and are available at:

http://www.cas.org/legal/infopolicy.html

This file contains CAS Registry Numbers for easy and accurate
substance identification.
'OBI' IS DEFAULT SEARCH FIELD FOR 'CAPLUS' FILE


L4             3 SEA FILE=CAPLUS SPE=ON  ABB=ON  ((ARACP OR ARA CP)(W)BAD OR
                   ARACPBAD OR ARA CPBAD)/BI



L3         37998 SEA FILE=CAPLUS SPE=ON  ABB=ON  SALMONELLA/CW
L5           708 SEA FILE=CAPLUS SPE=ON  ABB=ON  GENE#/OBI(L)FUR/OBI OR (FUR
                   GENE#)/BI
L7         51696 SEA FILE=CAPLUS SPE=ON  ABB=ON  ATTENUAT?/OBI
L8            10 SEA FILE=CAPLUS SPE=ON  ABB=ON  L3 AND L5 AND L7



L3         37998 SEA FILE=CAPLUS SPE=ON  ABB=ON  SALMONELLA/CW
L5           708 SEA FILE=CAPLUS SPE=ON  ABB=ON  GENE#/OBI(L)FUR/OBI OR (FUR
                   GENE#)/BI
L9         38618 SEA FILE=CAPLUS SPE=ON  ABB=ON  LIPOPOLYSACCHARIDES/CT
L11          524 SEA FILE=CAPLUS SPE=ON  ABB=ON  L9(L)SYNTHES?/OBI
L12            1 SEA FILE=CAPLUS SPE=ON  ABB=ON  L11 AND L3 AND L5
```

```
L3        37998 SEA FILE=CAPLUS SPE=ON  ABB=ON  SALMONELLA/CW
L4            3 SEA FILE=CAPLUS SPE=ON  ABB=ON  ((ARACP OR ARA CP)(W)BAD OR
                ARACPBAD OR ARA CPBAD)/BI
L5          708 SEA FILE=CAPLUS SPE=ON  ABB=ON  GENE#/OBI(L)FUR/OBI OR (FUR
                GENE#)/BI
L15        3376 SEA FILE=CAPLUS SPE=ON  ABB=ON  O/OBI(L)ANTIGEN#/CW
L18           2 SEA FILE=CAPLUS SPE=ON  ABB=ON  L15 AND L3 AND (L4 OR L5)



L3        37998 SEA FILE=CAPLUS SPE=ON  ABB=ON  SALMONELLA/CW
L9        38618 SEA FILE=CAPLUS SPE=ON  ABB=ON  LIPOPOLYSACCHARIDES/CT
L11         524 SEA FILE=CAPLUS SPE=ON  ABB=ON  L9(L)SYNTHES?/OBI
L15        3376 SEA FILE=CAPLUS SPE=ON  ABB=ON  O/OBI(L)ANTIGEN#/CW
L19           3 SEA FILE=CAPLUS SPE=ON  ABB=ON  L11 AND L15 AND L3



L3        37998 SEA FILE=CAPLUS SPE=ON  ABB=ON  SALMONELLA/CW
L7        51696 SEA FILE=CAPLUS SPE=ON  ABB=ON  ATTENUAT?/OBI
L9        38618 SEA FILE=CAPLUS SPE=ON  ABB=ON  LIPOPOLYSACCHARIDES/CT
L15        3376 SEA FILE=CAPLUS SPE=ON  ABB=ON  O/OBI(L)ANTIGEN#/CW
L21           6 SEA FILE=CAPLUS SPE=ON  ABB=ON  L3 AND L7 AND L15 AND L9


=> s 14,18,112,118,119,121 not 135

L130         10 (L4 OR L8 OR L12 OR L18 OR L19 OR L21) NOT L35

=> fil embase; d que 184; d que 185; d que 187; d que 190

FILE 'EMBASE' ENTERED AT 10:05:39 ON 30 NOV 2010
Copyright (c) 2010 Elsevier B.V. All rights reserved.

 FILE COVERAGE: EMBASE-originated material 1947 to 26 Nov 2010 (20101126/ED)
                Unique MEDLINE content 1948 to present

 EMBASE is now updated daily.  SDI frequency remains weekly (default)
 and biweekly.

 This file contains CAS Registry Numbers for easy and accurate
 substance identification.

 For further assistance, please contact your local helpdesk.


L84           1 SEA FILE=EMBASE SPE=ON  ABB=ON  ((ARACP OR ARA CP)(W)BAD OR
                ARACPBAD OR ARA CPBAD)



L68       67092 SEA FILE=EMBASE SPE=ON  ABB=ON  SALMONELLA+NT/CT
L71         190 SEA FILE=EMBASE SPE=ON  ABB=ON  FUR GENE#
L85           7 SEA FILE=EMBASE SPE=ON  ABB=ON  L68 AND L71



L68       67092 SEA FILE=EMBASE SPE=ON  ABB=ON  SALMONELLA+NT/CT
L70         367 SEA FILE=EMBASE SPE=ON  ABB=ON  FERRIC UPTAKE REGULAT?
```

```
L74         2711 SEA FILE=EMBASE SPE=ON  ABB=ON  O ANTIGEN/CT
L87            1 SEA FILE=EMBASE SPE=ON  ABB=ON  L68 AND L70 AND L74



L68        67092 SEA FILE=EMBASE SPE=ON  ABB=ON  SALMONELLA+NT/CT
L70          367 SEA FILE=EMBASE SPE=ON  ABB=ON  FERRIC UPTAKE REGULAT?
L78        11332 SEA FILE=EMBASE SPE=ON  ABB=ON  LIVE VACCINE/CT
L79       189362 SEA FILE=EMBASE SPE=ON  ABB=ON  ATTENUAT?
L80       544225 SEA FILE=EMBASE SPE=ON  ABB=ON  MUTATION+NT/CT
L81        48065 SEA FILE=EMBASE SPE=ON  ABB=ON  MUTANT/CT OR BACTERIUM
                 MUTANT+NT/CT
L82        31722 SEA FILE=EMBASE SPE=ON  ABB=ON  MUTANT PROTEIN/CT
L86           10 SEA FILE=EMBASE SPE=ON  ABB=ON  L68 AND L70 AND (L78 OR L79 OR
                 L80 OR L81 OR L82)
L89        11319 SEA FILE=EMBASE SPE=ON  ABB=ON  REGULATOR GENE/CT
L90            1 SEA FILE=EMBASE SPE=ON  ABB=ON  L86 AND L89


=> s l84,l85,l87,l90 not l97

L131          10 (L84 OR L85 OR L87 OR L90) NOT L97          L97=INVENTOR SEARCH

=> fil medl; d que l38; d que l47; d que l50;d que l54; d que l55; d que l57

FILE 'MEDLINE' ENTERED AT 10:05:41 ON 30 NOV 2010

 FILE LAST UPDATED: 27 Nov 2010 (20101127/UP).  FILE COVERS 1946 TO DATE.

 MEDLINE and LMEDLINE have been updated with the 2010 Medical Subject
 Headings (MeSH) vocabulary and tree numbers from the U.S.  National Library
 of Medicine (NLM).  Additional information is available at

 http://www.nlm.nih.gov/pubs/techbull/nd09/nd09_medline_data_changes_2010.html.

 The Medline file has been reloaded effective January 24, 2010.  See HELP
 RLOAD for details.

 This file contains CAS Registry Numbers for easy and accurate
 substance identification.

 See HELP RANGE before carrying out any RANGE search.


L38            1 SEA FILE=MEDLINE SPE=ON  ABB=ON  ((ARACP OR ARA CP)(W)BAD OR
                 ARACPBAD OR ARA CPBAD)



L37        48420 SEA FILE=MEDLINE SPE=ON  ABB=ON  SALMONELLA+NT/CT
L43          154 SEA FILE=MEDLINE SPE=ON  ABB=ON  FUR GENE#
L47            5 SEA FILE=MEDLINE SPE=ON  ABB=ON  L43 AND L37



L39         2584 SEA FILE=MEDLINE SPE=ON  ABB=ON  O ANTIGENS/CT
L43          154 SEA FILE=MEDLINE SPE=ON  ABB=ON  FUR GENE#
L50            0 SEA FILE=MEDLINE SPE=ON  ABB=ON  L39 AND L43
```

```
L37       48420 SEA FILE=MEDLINE SPE=ON  ABB=ON  SALMONELLA+NT/CT
L39        2584 SEA FILE=MEDLINE SPE=ON  ABB=ON  O ANTIGENS/CT
L52         490 SEA FILE=MEDLINE SPE=ON  ABB=ON  FERRIC UPTAKE REGULATING
                PROTEINS, BACTERIAL/CN
L53          27 SEA FILE=MEDLINE SPE=ON  ABB=ON  L52 AND L37
L54           0 SEA FILE=MEDLINE SPE=ON  ABB=ON  L53 AND L39



L37       48420 SEA FILE=MEDLINE SPE=ON  ABB=ON  SALMONELLA+NT/CT
L40        7659 SEA FILE=MEDLINE SPE=ON  ABB=ON  VACCINES, ATTENUATED/CT
L52         490 SEA FILE=MEDLINE SPE=ON  ABB=ON  FERRIC UPTAKE REGULATING
                PROTEINS, BACTERIAL/CN
L55           1 SEA FILE=MEDLINE SPE=ON  ABB=ON  L52 AND L37 AND L40



L37       48420 SEA FILE=MEDLINE SPE=ON  ABB=ON  SALMONELLA+NT/CT
L52         490 SEA FILE=MEDLINE SPE=ON  ABB=ON  FERRIC UPTAKE REGULATING
                PROTEINS, BACTERIAL/CN
L56       20666 SEA FILE=MEDLINE SPE=ON  ABB=ON  BACTERIAL OUTER MEMBRANE
                PROTEINS+NT/CT
L57           1 SEA FILE=MEDLINE SPE=ON  ABB=ON  L52 AND L37 AND L56


=> s l38,l47,l55,l57 not l66

L132          5 (L38 OR L47 OR L55 OR L57) NOT L66           L66=INVENTOR SEARCH

=> => dup rem l132,l130,l129,l131
FILE 'MEDLINE' ENTERED AT 10:06:06 ON 30 NOV 2010

FILE 'CAPLUS' ENTERED AT 10:06:06 ON 30 NOV 2010
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2010 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'WPIX' ENTERED AT 10:06:06 ON 30 NOV 2010
COPYRIGHT (C) 2010 THOMSON REUTERS

FILE 'BIOSIS' ENTERED AT 10:06:06 ON 30 NOV 2010
Copyright (c) 2010 The Thomson Corporation

FILE 'ESBIOBASE' ENTERED AT 10:06:06 ON 30 NOV 2010
COPYRIGHT (C) 2010 Elsevier Science B.V., Amsterdam. All rights reserved.

FILE 'BIOTECHDS' ENTERED AT 10:06:06 ON 30 NOV 2010
COPYRIGHT (C) 2010 THOMSON REUTERS

FILE 'SCISEARCH' ENTERED AT 10:06:06 ON 30 NOV 2010
Copyright (c) 2010 The Thomson Corporation

FILE 'EMBASE' ENTERED AT 10:06:06 ON 30 NOV 2010
Copyright (c) 2010 Elsevier B.V. All rights reserved.
PROCESSING COMPLETED FOR L132
PROCESSING COMPLETED FOR L130
PROCESSING COMPLETED FOR L129
PROCESSING COMPLETED FOR L131
L133         27 DUP REM L132 L130 L129 L131 (10 DUPLICATES REMOVED)
```

```
                ANSWERS '1-5' FROM FILE MEDLINE
                ANSWERS '6-15' FROM FILE CAPLUS
                ANSWER '16' FROM FILE WPIX
                ANSWERS '17-19' FROM FILE BIOSIS
                ANSWER '20' FROM FILE BIOTECHDS
                ANSWERS '21-25' FROM FILE SCISEARCH
                ANSWERS '26-27' FROM FILE EMBASE

=> d iall 1-5; d ibib abs hitind 6-15; d ifull 16; d iall 17-27

L133 ANSWER 1 OF 27     MEDLINE on STN                  DUPLICATE 2
ACCESSION NUMBER:   2008688099     MEDLINE  Full-text
DOCUMENT NUMBER:    PubMed ID: 18790861
TITLE:              RstA-promoted expression of the ferrous iron transporter
                    FeoB under iron-replete conditions enhances Fur activity in
                    Salmonella enterica.
AUTHOR:             Jeon Jihye; Kim Hyunkeun; Yun Jiae; Ryu Sangryeol; Groisman
                    Eduardo A; Shin Dongwoo
CORPORATE SOURCE:   Department of Molecular Cell Biology, Samsung Biomedical
                    Research Institute, Sungkyunkwan University School of
                    Medicine, Chunchun-dong 300, Jangan-gu, Suwon 440-746,
                    South Korea.
CONTRACT NUMBER:     (United States Howard Hughes Medical Institute)
SOURCE:             Journal of bacteriology, (2008 Nov) Vol. 190, No. 22, pp.
                    7326-34.  Electronic Publication: 2008-09-12.
                    Journal code: 2985120R. E-ISSN: 1098-5530. L-ISSN:
                    0021-9193.
                    Report No.: NLM-PMC2576650.
PUB. COUNTRY:       United States
DOCUMENT TYPE:      Journal; Article; (JOURNAL ARTICLE)
                    (RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE:           English
FILE SEGMENT:       Priority Journals
ENTRY MONTH:        200901
ENTRY DATE:         Entered STN: 29 Oct 2008
                    Last Updated on STN: 14 Jan 2009
                    Entered Medline: 13 Jan 2009
ABSTRACT:
The Fur protein is a primary regulator that monitors and controls cytoplasmic
iron levels.  We now report the identification of a regulatory pathway mediated
by the Salmonella response regulator RstA that promotes Fur activity.
Genome-wide expression experiments revealed that under iron-replete conditions,
expression of the RstA protein from a plasmid lowered transcription levels of
various genes involved in iron acquisition.  The RstA protein controlled
iron-responsive genes through the Fur-Fe(II) protein because deletion of the
***fur***  gene or iron depletion abrogated RstA-mediated repression
of these genes.  The RstA protein maintained wild-type levels of the Fur
protein but exceptionally activated transcription of the feoAB operon encoding
the ferrous iron transporter FeoB by binding directly to the feoA promoter.
This FeoB induction resulted in increased ferrous iron uptake, which associates
with the Fur protein because lack of RstA-dependent transcriptional activation
of the feoA promoter and feoB-deletion abolished repression of the Fur target
genes by the RstA protein.  Under iron-replete conditions, RstA expression
retarded Salmonella growth but enabled the Fur protein to repress the target
genes beyond the levels which were simply accomplished by iron.
CONTROLLED TERM:     Bacterial Proteins: GE, genetics
                    *Bacterial Proteins: ME, metabolism
                     Bacterial Proteins: PH, physiology
                     Blotting, Western
                     Electrophoretic Mobility Shift Assay
```

Gene Expression
Gene Expression Profiling
Gene Expression Regulation, Bacterial
Iron: DF, deficiency
*Iron: ME, metabolism
Oligonucleotide Array Sequence Analysis
Operon: GE, genetics
Promoter Regions, Genetic: GE, genetics
Protein Binding
Repressor Proteins: GE, genetics
*Repressor Proteins: ME, metabolism
Repressor Proteins: PH, physiology
Reverse Transcriptase Polymerase Chain Reaction
Salmonella enterica: GE, genetics
Salmonella enterica: GD, growth & development
*Salmonella enterica: ME, metabolism
Transcription, Genetic

CAS REGISTRY NO.: 7439-89-6 (Iron)

CHEMICAL NAME: 0 (Bacterial Proteins); 0 (Repressor Proteins); 0 (ferric uptake regulating proteins, bacterial)

MEDLINE REFERENCE COUNT: 35 There are 35 cited references available in MEDLINE for this document.

REFERENCE(S): CITED REFERENCES AVAILABLE IN MEDLINE

(1) Yun, Jiae; J Bacteriol. 2008 Jul, V190(13), P4512-20. MEDLINE
(2) Perez, J Christian; J Biol Chem. 2008 Apr 18, V283(16), P10773-83. MEDLINE
(3) Cabeza, Maria L; J Bacteriol. 2007 Oct, V189(20), P7335-42. MEDLINE
(4) Ogasawara, Hiroshi; J Bacteriol. 2007 Jul, V189(13), P4791-9. MEDLINE
(5) Varghese, Shery; Mol Microbiol. 2007 May, V64(3), P822-30. MEDLINE
(6) Shin, Dongwoo; Science. 2006 Dec 8, V314(5805), P1607-9. MEDLINE
(7) White, A P; J Bacteriol. 2006 Dec, V188(24), P8395-406. MEDLINE
(8) Nishino, Kunihiko; Mol Microbiol. 2006 Aug, V61(3), P645-54. MEDLINE
(9) Cartron, Michael L; Biometals. 2006 Apr, V19(2), P143-57. MEDLINE
(10) Latasa, Cristina; Mol Microbiol. 2005 Dec, V58(5), P1322-39. MEDLINE
(11) Zwir, Igor; Bioinformatics. 2005 Nov 15, V21(22), P4073-83. MEDLINE
(12) Zwir, Igor; Proc Natl Acad Sci U S A. 2005 Feb 22, V102(8), P2862-7. MEDLINE
(13) Shin, Dongwoo; J Biol Chem. 2005 Feb 11, V280(6), P4089-94. MEDLINE
(14) Yamamoto, Kaneyoshi; J Biol Chem. 2005 Jan 14, V280(2), P1448-56. MEDLINE
(15) Escolar, L; J Bacteriol. 1999 Oct, V181(20), P6223-9. MEDLINE
(16) Zheng, M; J Bacteriol. 1999 Aug, V181(15), P4639-43. MEDLINE
(17) Vartivarian, S E; Arch Biochem Biophys. 1999 Apr 1, V364(1), P75-82. MEDLINE
(18) Zhou, D; Infect Immun. 1999 Apr, V67(4), P1974-81. MEDLINE
(19) Escolar, L; J Mol Biol. 1998 Oct 30, V283(3), P537-47. MEDLINE
(20) Lan, C Y; J Bacteriol. 1998 Jan, V180(1), P171-4. MEDLINE
(21) Soncini, F C; J Bacteriol. 1995 Aug, V177(15), P4364-71. MEDLINE
(22) Touati, D; J Bacteriol. 1995 May, V177(9), P2305-14. MEDLINE
(23) Kammler, M; J Bacteriol. 1993 Oct, V175(19), P6212-9. MEDLINE
(24) Tardat, B; Mol Microbiol. 1991 Feb, V5(2), P455-65. MEDLINE
(25) Tabor, S; Proc Natl Acad Sci U S A. 1985 Feb, V82(4), P1074-8. MEDLINE
(26) Fields, P I; Proc Natl Acad Sci U S A. 1986 Jul, V83(14), P5189-93. MEDLINE
(27) Hantke, K; Mol Gen Genet. 1981, V182(2), P288-92. MEDLINE
(28) Lejona, Sergio; J Bacteriol. 2004 Apr, V186(8), P2476-80. MEDLINE
(29) McHugh, Jonathan P; J Biol Chem. 2003 Aug 8, V278(32), P29478-86. MEDLINE
(30) Minagawa, Shu; J Bacteriol. 2003 Jul, V185(13), P3696-702. MEDLINE
(31) Boyer, E; Infect Immun. 2002 Nov, V70(11), P6032-42. MEDLINE
(32) Wosten, M M; Cell. 2000 Sep 29, V103(1), P113-25. MEDLINE
(33) Datsenko, K A; Proc Natl Acad Sci U S A. 2000 Jun 6, V97(12), P6640-5.

MEDLINE
(34) Bjarnason, Jaime; J Bacteriol. 2003 Aug, V185(16), P4973-82. MEDLINE
(35) Andrews, Simon C; FEMS Microbiol Rev. 2003 Jun, V27(2-3), P215-37. MEDLINE

L133 ANSWER 2 OF 27 MEDLINE on STN DUPLICATE 3
ACCESSION NUMBER: 2008507961 MEDLINE Full-text
DOCUMENT NUMBER: PubMed ID: 18656407
TITLE: Subinhibitory concentrations of tetracycline affect virulence gene expression in a multi-resistant Salmonella enterica subsp. enterica serovar Typhimurium DT104.
AUTHOR: Weir Emily K; Martin Laura C; Poppe Cornelis; Coombes Brian K; Boerlin Patrick
CORPORATE SOURCE: Laboratory for Foodborne Zoonoses, Public Health Agency of Canada, 110 Stone Road West, Guelph, Ontario, N1G 3W4, Canada.
SOURCE: Microbes and infection / Institut Pasteur, (2008 Jul) Vol. 10, No. 8, pp. 901-7. Electronic Publication: 2008-06-18. Journal code: 100883508. ISSN: 1286-4579. L-ISSN: 1286-4579.
PUB. COUNTRY: France
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE) (RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200810
ENTRY DATE: Entered STN: 12 Aug 2008
Last Updated on STN: 22 Oct 2008
Entered Medline: 21 Oct 2008

ABSTRACT:
Treatment of salmonellosis with antibiotics is controversial and may prolong carriage and shedding. Therefore, this study sought to investigate if exposure to antimicrobials influences the expression of factors involved in virulence and host colonization. The effect of subinhibitory tetracycline treatment (16 microg/ml, 30 min) on a multi-drug resistant Salmonella Typhimurium DT104 strain was investigated using a targeted microarray. Real-time reverse transcriptase PCR was used to confirm and further assess transcription of 10 selected genes. An in vitro cell invasion assay was performed to assess the invasiveness of the tetracycline-treated isolate. Out of 323 genes, 11 were significantly up-regulated and four were down-regulated in the microarray assays. The hilD and hilA genes, both regulators of Salmonella Pathogenicity Island 1, were up-regulated. Other up-regulated genes included the fliC, fliD, motA and motB genes, involved in motility, the fur gene, an important regulator of iron acquisition systems and of acid tolerance. The drug-exposed replicates showed a 2.5-fold increase in intracellular bacteria over the non-exposed control in cell cultures. These findings suggest a drug-induced expression profile consistent with the early stages of Salmonella infection and invasion concomitant with an increased ability to invade epithelial cells in vitro.
CONTROLLED TERM: *Anti-Bacterial Agents: PD, pharmacology
Bacterial Proteins: BI, biosynthesis
Colony Count, Microbial
Cytoplasm: MI, microbiology
Drug Resistance, Multiple, Bacterial
Epithelial Cells: MI, microbiology
Gene Expression Profiling
*Gene Expression Regulation, Bacterial: DE, drug effects
Hela Cells
Humans
Oligonucleotide Array Sequence Analysis
RNA, Bacterial: BI, biosynthesis

RNA, Messenger: BI, biosynthesis
Reverse Transcriptase Polymerase Chain Reaction
*Salmonella typhimurium: DE, drug effects
*Tetracycline: PD, pharmacology
Up-Regulation
*Virulence Factors: BI, biosynthesis
CAS REGISTRY NO.: 60-54-8 (Tetracycline)
CHEMICAL NAME: 0 (Anti-Bacterial Agents); 0 (Bacterial Proteins); 0 (RNA, Bacterial); 0 (RNA, Messenger); 0 (Virulence Factors)

L133 ANSWER 3 OF 27 MEDLINE on STN DUPLICATE 4
ACCESSION NUMBER: 2007758095 MEDLINE Full-text
DOCUMENT NUMBER: PubMed ID: 18096019
TITLE: Expression of in vivo-inducible Salmonella enterica promoters during infection of Caenorhabditis elegans.
AUTHOR: Van Gerven Nani; Derous Veerle; Hernalsteens Jean-Pierre
SOURCE: FEMS microbiology letters, (2008 Jan) Vol. 278, No. 2, pp. 236-41.
Journal code: 7705721. ISSN: 0378-1097. L-ISSN: 0378-1097.
PUB. COUNTRY: England: United Kingdom
DOCUMENT TYPE: Letter
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200806
ENTRY DATE: Entered STN: 22 Dec 2007
Last Updated on STN: 3 Jun 2008
Entered Medline: 2 Jun 2008

ABSTRACT:
In vitro mimicking of the stimuli controlling in vivo-inducible bacterial promoters during infection of the host can be complex. Therefore, the use of the nematode Caenorhabditis elegans was evaluated, as a surrogate host to examine the expression of Salmonella enterica promoters. Green fluorescent protein (GFP+) was put under the control of the promoters of the pagC, mgtB, sseA, pgtE and fur genes of S. enterica. After infection of C. elegans with an S. enterica serovar Typhimurium vaccine strain expressing these constructs, clear bacterial expression of GFP+ was observed under the control of all five promoters, although significant expression was not always obtained in vitro. It is concluded that C. elegans constitutes a useful model system for the study of the in vivo expression of Salmonella promoters.

CONTROLLED TERM: Adenosine Triphosphatases: GE, genetics
Animals
Bacterial Proteins: GE, genetics
*Caenorhabditis elegans: MI, microbiology
Cation Transport Proteins: GE, genetics
Endopeptidases: GE, genetics
Gene Expression Regulation
Green Fluorescent Proteins: GE, genetics
Green Fluorescent Proteins: ME, metabolism
Membrane Proteins: GE, genetics
Microscopy, Fluorescence
Molecular Chaperones: GE, genetics
*Promoter Regions, Genetic: GE, genetics
Repressor Proteins: GE, genetics
*Salmonella enterica: GE, genetics
Salmonella enterica: GD, growth & development
Salmonella enterica: ME, metabolism
CAS REGISTRY NO.: 134773-72-1 (pagC protein, Salmonella typhimurium); 147336-22-9 (Green Fluorescent Proteins)
CHEMICAL NAME: 0 (Bacterial Proteins); 0 (Cation Transport Proteins); 0

(Membrane Proteins); 0 (Molecular Chaperones); 0 (Repressor Proteins); 0 (SseA protein, Salmonella typhimurium); 0 (ferric uptake regulating proteins, bacterial); EC 3.4.- (Endopeptidases); EC 3.4.- (PgtE protein, Salmonella enterica); EC 3.6.1.- (Adenosine Triphosphatases); EC 3.6.1.- (MgtB protein, Salmonella typhimurium)

L133 ANSWER 4 OF 27 MEDLINE on STN DUPLICATE 6
ACCESSION NUMBER: 1995238265 MEDLINE Full-text
DOCUMENT NUMBER: PubMed ID: 7536729
TITLE: The methylthio group (ms2) of N6-(4-hydroxyisopentenyl)-2-methylthioadenosine (ms2io6A) present next to the anticodon contributes to the decoding efficiency of the tRNA.
AUTHOR: Esberg B; Bjork G R
CORPORATE SOURCE: Department of Microbiology, Umea University, Sweden.
SOURCE: Journal of bacteriology, (1995 Apr) Vol. 177, No. 8, pp. 1967-75.
Journal code: 2985120R. ISSN: 0021-9193. L-ISSN: 0021-9193.
Report No.: NLM-PMC176837.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199505
ENTRY DATE: Entered STN: 5 Jun 1995
Last Updated on STN: 29 Jan 1996
Entered Medline: 19 May 1995

ABSTRACT:
A Salmonella typhimurium LT2 mutant which harbors a mutation (miaB2508::Tn10dCm) that results in a reduction in the activities of the amber suppressors supF30 (tRNA(CUATyr)), supD10 (tRNA(CUASer)), and supJ60 (tRNA(CUALeu)) was isolated. The mutant was deficient in the methylthio group (ms2) of N6-(4-hydroxyisopentenyl)-2-methylthioadenosine (ms2io6A), a modified nucleoside that is normally present next to the anticodon (position 37) in tRNAs that read codons that start with uridine. Consequently, the mutant had i6A37 instead of ms2io6A37 in its tRNA. Only small amounts of io6A37 was found. We suggest that the synthesis of ms2io6A occurs in the following order: A-37-->i6A37-->ms2i6A37-->ms2io6A37. The mutation miaB2508::Tn10dCm was 60% linked to the nag gene (min 15) and 40% linked to the fur ***gene*** and is located counterclockwise from both of these genes. The growth rates of the mutant in four growth media did not significantly deviate from those of a wild-type strain. The polypeptide chain elongation rate was also unaffected in the mutant. However, the miaB2508::Tn10dCm mutation rendered the cell more resistant or sensitive, compared with a wild-type cell, to several amino acid analogs, suggesting that this mutation influences the regulation of several amino acid biosynthetic operons. The efficiencies of the aforementioned amber suppressors were decreased to as low as 16%, depending on the suppressor and the codon context monitored, demonstrating that the ms2 group of ms2io6A contributes to the decoding efficiency of tRNA. However, the major impact of the ms2io6 modification in the decoding process comes from the io6 group alone or from the combination of the ms2 and io6 groups, not from the ms2 group alone.
CONTROLLED TERM: *Anticodon: CH, chemistry
*Anticodon: GE, genetics
Base Sequence
Codon: GE, genetics
Genes, Bacterial
*Isopentenyladenosine: AA, analogs & derivatives

Isopentenyladenosine: CH, chemistry
Molecular Sequence Data
Molecular Structure
Mutation
RNA, Bacterial: CH, chemistry
*RNA, Bacterial: GE, genetics
*RNA, Transfer, Amino Acid-Specific: CH, chemistry
*RNA, Transfer, Amino Acid-Specific: GE, genetics
Salmonella typhimurium: GE, genetics
Salmonella typhimurium: GD, growth & development
Salmonella typhimurium: ME, metabolism
Suppression, Genetic

CAS REGISTRY NO.: 26190-61-4 (N(6)-(4-hydroxyisopentenyl)-2-methylthioadenosine); 7724-76-7 (Isopentenyladenosine)

CHEMICAL NAME: 0 (Anticodon); 0 (Codon); 0 (RNA, Bacterial); 0 (RNA, Transfer, Amino Acid-Specific)

GENE NAME: mia; nag

MEDLINE REFERENCE COUNT: 57 There are 57 cited references available in MEDLINE for this document.

REFERENCE(S): CITED REFERENCES AVAILABLE IN MEDLINE

(1) VOGEL, H J; J Biol Chem. 1956 Jan, V218(1), P97-106. MEDLINE
(2) Woese, C R; Proc Natl Acad Sci U S A. 1990 Jun, V87(12), P4576-9. MEDLINE
(3) Limbach, P A; Nucleic Acids Res. 1994 Jun 25, V22(12), P2183-96. MEDLINE
(4) Persson, B C; Biochimie. 1994, V76(12), P1152-60. MEDLINE
(5) Durand, J M; J Bacteriol. 1994 Aug, V176(15), P4627-34. MEDLINE
(6) Persson, B C; J Bacteriol. 1993 Dec, V175(24), P7776-85. MEDLINE
(7) Benson, N R; J Bacteriol. 1992 Mar, V174(5), P1673-81. MEDLINE
(8) Persson, B C; Proc Natl Acad Sci U S A. 1992 May 1, V89(9), P3995-8. MEDLINE
(9) Bochner, B R; J Bacteriol. 1980 Aug, V143(2), P926-33. MEDLINE
(10) Buck, M; Nucleic Acids Res. 1981 Jan 24, V9(2), P401-14. MEDLINE
(11) Miller, J H; J Mol Biol. 1983 Feb 15, V164(1), P59-71. MEDLINE
(12) Buck, M; Anal Biochem. 1983 Feb 15, V129(1), P1-13. MEDLINE
(13) Vacher, J; J Mol Biol. 1984 Aug 5, V177(2), P329-42. MEDLINE
(14) Buck, M; Cell. 1984 Feb, V36(2), P523-31. MEDLINE
(15) Buck, M; Nucleic Acids Res. 1982 Apr 24, V10(8), P2609-24. MEDLINE
(16) Gehrke, C W; J Chromatogr. 1982 Jul 9, V230(2), P297-308. MEDLINE
(17) Maloy, S R; J Bacteriol. 1981 Feb, V145(2), P1110-1. MEDLINE
(18) Bossi, L; Nature. 1980 Jul 10, V286(5769), P123-7. MEDLINE
(19) Vold, B S; J Biol Chem. 1979 Aug 10, V254(15), P7362-7. MEDLINE
(20) Yanofsky, C; J Mol Biol. 1977 Jul 15, V113(4), P663-77. MEDLINE
(21) Neidhardt, F C; J Bacteriol. 1977 Jan, V129(1), P378-87. MEDLINE
(22) Eisenberg, S P; J Mol Biol. 1979 Nov 25, V135(1), P111-26. MEDLINE
(23) Brake, A J; Proc Natl Acad Sci U S A. 1978 Oct, V75(10), P4824-7. MEDLINE
(24) Griffiths, E; Infect Immun. 1978 Nov, V22(2), P312-7. MEDLINE
(25) Griffiths, E; Eur J Biochem. 1978 Jan 16, V82(2), P503-13. MEDLINE
(26) Bochner, B R; Appl Environ Microbiol. 1977 Feb, V33(2), P434-44. MEDLINE
(27) Cortese, R; Proc Natl Acad Sci U S A. 1974 May, V71(5), P1857-61. MEDLINE
(28) Muller-Hill, B; Nature. 1974 Jun 7, V249(457), P561-3. MEDLINE
(29) Wettstein, F O; J Mol Biol. 1968 Nov 28, V38(1), P25-40. MEDLINE
(30) Schleif, R; J Bacteriol. 1973 Jul, V115(1), P9-14. MEDLINE
(31) Agris, P F; Nucleic Acids Res. 1975 May, V2(5), P691-8. MEDLINE
(32) Bartz, J K; Biochem Biophys Res Commun. 1970 Sep 30, V40(6), P1481-7. MEDLINE
(33) Neidhardt, F C; J Bacteriol. 1974 Sep, V119(3), P736-47. MEDLINE
(34) Schmieger, H; Mol Gen Genet. 1972, V119(1), P75-88. MEDLINE
(35) Gefter, M L; J Mol Biol. 1969 Jan 14, V39(1), P145-57. MEDLINE
(36) Rosenberg, A H; J Mol Biol. 1969 Dec 28, V46(3), P581-4. MEDLINE
(37) Gefter, M L; Biochem Biophys Res Commun. 1969 Aug 7, V36(3), P435-41.

MEDLINE
(38) Putnam, S L; Anal Biochem. 1975 Feb, V63(2), P350-60. MEDLINE
(39) Bjork, G R; J Bacteriol. 1975 Oct, V124(1), P99-111. MEDLINE
(40) Foster, J W; J Bacteriol. 1992 Jul, V174(13), P4317-23. MEDLINE
(41) Diaz, I; J Mol Biol. 1991 Dec 20, V222(4), P1161-71. MEDLINE
(42) Ericson, J U; J Mol Biol. 1991 Apr 5, V218(3), P509-16. MEDLINE
(43) Ericson, J U; J Bacteriol. 1986 Jun, V166(3), P1013-21. MEDLINE
(44) Elliott, T; Mol Gen Genet. 1988 Aug, V213(2-3), P332-8. MEDLINE
(45) Kukral, A M; J Bacteriol. 1987 May, V169(5), P1787-93. MEDLINE
(46) Wilson, R K; Proc Natl Acad Sci U S A. 1989 Jan, V86(2), P409-13. MEDLINE
(47) Smith, D; J Mol Biol. 1989 Apr 5, V206(3), P489-501. MEDLINE
(48) Grosjean, H; Nucleic Acids Res. 1985 Aug 12, V13(15), P5697-706. MEDLINE
(49) Bouadloun, F; J Bacteriol. 1986 Jun, V166(3), P1022-7. MEDLINE
(50) Caillet, J; J Bacteriol. 1988 Sep, V170(9), P4147-52. MEDLINE
(51) Connolly, D M; J Bacteriol. 1989 Jun, V171(6), P3233-46. MEDLINE
(52) Diaz, I; Mol Gen Genet. 1987 Jul, V208(3), P373-6. MEDLINE
(53) Bjork, G R; Annu Rev Biochem. 1987, V56, P263-87. MEDLINE
(54) Houssier, C; J Biomol Struct Dyn. 1985 Oct, V3(2), P387-408. MEDLINE
(55) Gollnick, P; J Bacteriol. 1990 Jun, V172(6), P3100-7. MEDLINE
(56) Janiak, F; Biochemistry. 1990 May 8, V29(18), P4268-77. MEDLINE
(57) Foster, J W; Microbiology. 1994 Feb, V140 (Pt 2), P341-52. MEDLINE

L133 ANSWER 5 OF 27 MEDLINE on STN DUPLICATE 7
ACCESSION NUMBER: 1994011346 MEDLINE Full-text
DOCUMENT NUMBER: PubMed ID: 8406841
TITLE: Role of acid tolerance response genes in Salmonella typhimurium virulence.
AUTHOR: Garcia-del Portillo F; Foster J W; Finlay B B
CORPORATE SOURCE: Biotechnology Laboratory, University of British Columbia, Vancouver, Canada.
SOURCE: Infection and immunity, (1993 Oct) Vol. 61, No. 10, pp. 4489-92.
Journal code: 0246127. ISSN: 0019-9567. L-ISSN: 0019-9567.
Report No.: NLM-PMC281185.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199311
ENTRY DATE: Entered STN: 17 Jan 1994
Last Updated on STN: 3 Feb 1997
Entered Medline: 16 Nov 1993

ABSTRACT:
The atp and fur genes are involved in the acid tolerance response of Salmonella typhimurium. An atp::Tn10 mutant was avirulent in the mouse typhoid model when assayed by oral and intraperitoneal routes. However, a fur mutant was completely virulent by the intraperitoneal route. No relevant differences in intracellular survival or invasion rates were observed for the two mutants in macrophages and epithelial cells. These data indicate that separate acid tolerance response genes may have different roles in S. typhimurium virulence.

CONTROLLED TERM: Animals
*Bacterial Proteins: ME, metabolism
Dogs
*Genes, Bacterial
Hela Cells
Humans
Hydrogen-Ion Concentration
Mice

Mice, Inbred BALB C
Mutagenesis, Insertional
*Proton-Translocating ATPases: ME, metabolism
*Repressor Proteins: ME, metabolism
Salmonella typhimurium: GE, genetics
*Salmonella typhimurium: PY, pathogenicity
Typhoid Fever: MI, microbiology
CHEMICAL NAME: 0 (Bacterial Proteins); 0 (Repressor Proteins); 0 (ferric uptake regulating proteins, bacterial); EC 3.6.3.14 (Proton-Translocating ATPases)
GENE NAME: atp; fur; unc
MEDLINE REFERENCE COUNT: 23 There are 23 cited references available in MEDLINE for this document.

REFERENCE(S): CITED REFERENCES AVAILABLE IN MEDLINE
(1) Benjamin, W H, Jr; Infect Immun. 1985 Nov, V50(2), P392-7. MEDLINE
(2) Galan, J E; Microb Pathog. 1989 Jun, V6(6), P433-43. MEDLINE
(3) Finlay, B B; Mol Microbiol. 1988 Nov, V2(6), P757-66. MEDLINE
(4) Finlay, B B; Mol Microbiol. 1989 Dec, V3(12), P1833-41. MEDLINE
(5) Fields, P I; Proc Natl Acad Sci U S A. 1986 Jul, V83(14), P5189-93. MEDLINE
(6) Stocker, B A; Curr Top Microbiol Immunol. 1986, V124, P149-72. MEDLINE
(7) von Meyenburg, K; Mol Gen Genet. 1982, V188(2), P240-8. MEDLINE
(8) Hoiseth, S K; Nature. 1981 May 21, V291(5812), P238-9. MEDLINE
(9) Bennett, R L; J Bacteriol. 1976 Jul, V127(1), P498-504. MEDLINE
(10) Alpuche Aranda, C M; Proc Natl Acad Sci U S A. 1992 Nov 1, V89(21), P10079-83. MEDLINE
(11) Ernst, J F; J Bacteriol. 1978 Sep, V135(3), P928-34. MEDLINE
(12) Foster, J W; J Bacteriol. 1992 Jul, V174(13), P4317-23. MEDLINE
(13) Foster, J W; J Bacteriol. 1991 Aug, V173(16), P5129-35. MEDLINE
(14) Leung, K Y; Proc Natl Acad Sci U S A. 1991 Dec 15, V88(24), P11470-4. MEDLINE
(15) Miller, S I; Mol Microbiol. 1991 Sep, V5(9), P2073-8. MEDLINE
(16) Foster, J W; J Bacteriol. 1991 Nov, V173(21), P6896-902. MEDLINE
(17) Groisman, E A; Trends Biochem Sci. 1990 Jan, V15(1), P30-3. MEDLINE
(18) Gahring, L C; Infect Immun. 1990 Feb, V58(2), P443-8. MEDLINE
(19) Foster, J W; J Bacteriol. 1990 Feb, V172(2), P771-8. MEDLINE
(20) Miller, S I; Proc Natl Acad Sci U S A. 1989 Jul, V86(13), P5054-8. MEDLINE
(21) Galan, J E; Proc Natl Acad Sci U S A. 1989 Aug, V86(16), P6383-7. MEDLINE
(22) Buchmeier, N A; Infect Immun. 1989 Jan, V57(1), P1-7. MEDLINE
(23) Fields, P I; Science. 1989 Feb 24, V243(4894 Pt 1), P1059-62. MEDLINE

L133 ANSWER 6 OF 27 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2010:1221418 CAPLUS Full-text
DOCUMENT NUMBER: 153:478805
TITLE: Recombinant Salmonella enterica strains presenting Campylobacter jejuni N-glycan
INVENTOR(S): Ilg, Karin; Aebi, Markus; Ahuja, Umesh; Amber, Saba; Schwarz, Flavio
PATENT ASSIGNEE(S): Eidgenoessische Technische Hochschule Zuerich, Switz.
SOURCE: PCT Int. Appl., 39pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

```
---------------    ----   --------    --------------------   --------
WO 2010108682        A1    20100930    WO 2010-EP1884         20100325
    W:  AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ,
        CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG,
        ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP,
        KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA,
        MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE,
        PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV,
        SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
    RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU,
        IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI,
        SK, SM, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,
        SN, TD, TG, BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ,
        UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
PRIORITY APPLN. INFO.:                 EP 2009-4445         A  20090327
```

AB The present invention relates to Salmonella enterica comprising at least one pgl operon of Campylobacter jejuni or a functional derivative thereof and presenting at least one N- glycan of Campylobacter jejuni or N-glycan derivative thereof on its cell surface. In addition, it is directed to medical uses and pharmaceutical compns. thereof as well as methods for treating and/or preventing Campylobacter and optionally Salmonella infections and methods for producing these Salmonella strains. IPCI C12N0001-20 [I,A]; C12N0001-36 [I,A]; C07K0014-205 [I,A]; C07K0014-195 [I,C*]; A61K0039-106 [I,A]

IPCR C12N0001-20 [I,C]; C12N0001-20 [I,A]; A61K0039-106 [I,C]; A61K0039-106 [I,A]; C07K0014-195 [I,C]; C07K0014-205 [I,A]; C12N0001-36 [I,C]; C12N0001-36 [I,A]

CC 16-2 (Fermentation and Bioindustrial Chemistry)
Section cross-reference(s): 3, 10

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(aro, claimed Salmonella gene mutated for attenuation; recombinant Salmonella enterica strains presenting Campylobacter jejuni N-glycan)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(aroA, claimed Salmonella gene mutated for attenuation; recombinant Salmonella enterica strains presenting Campylobacter jejuni N-glycan)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(asd, claimed Salmonella gene mutated for attenuation; recombinant Salmonella enterica strains presenting Campylobacter jejuni N-glycan)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(cdt, claimed Salmonella gene mutated for attenuation; recombinant Salmonella enterica strains presenting Campylobacter jejuni N-glycan)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(crp, claimed Salmonella gene mutated for attenuation; recombinant Salmonella enterica strains presenting Campylobacter jejuni N-glycan)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(cya, claimed Salmonella gene mutated for attenuation; recombinant Salmonella enterica strains presenting Campylobacter jejuni N-glycan)

IT Gene, microbial

RL: BSU (Biological study, unclassified); BIOL (Biological study)
(dap, claimed Salmonella gene mutated for attenuation;
recombinant Salmonella enterica strains presenting Campylobacter jejuni
N-glycan)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(fur, claimed Salmonella gene mutated for
attenuation; recombinant Salmonella enterica strains presenting
Campylobacter jejuni N-glycan)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(galE, claimed Salmonella gene mutated for attenuation;
recombinant Salmonella enterica strains presenting Campylobacter jejuni
N-glycan)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(galU, claimed Salmonella gene mutated for attenuation;
recombinant Salmonella enterica strains presenting Campylobacter jejuni
N-glycan)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(hemA, claimed Salmonella gene mutated for attenuation;
recombinant Salmonella enterica strains presenting Campylobacter jejuni
N-glycan)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(htrA, claimed Salmonella gene mutated for attenuation;
recombinant Salmonella enterica strains presenting Campylobacter jejuni
N-glycan)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(nadA, claimed Salmonella gene mutated for attenuation;
recombinant Salmonella enterica strains presenting Campylobacter jejuni
N-glycan)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(ompR, claimed Salmonella gene mutated for attenuation;
recombinant Salmonella enterica strains presenting Campylobacter jejuni
N-glycan)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(pab, claimed Salmonella gene mutated for attenuation;
recombinant Salmonella enterica strains presenting Campylobacter jejuni
N-glycan)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(phoP, claimed Salmonella gene mutated for attenuation;
recombinant Salmonella enterica strains presenting Campylobacter jejuni
N-glycan)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(phoQ, claimed Salmonella gene mutated for attenuation;
recombinant Salmonella enterica strains presenting Campylobacter jejuni
N-glycan)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(pmi, claimed Salmonella gene mutated for attenuation;
recombinant Salmonella enterica strains presenting Campylobacter jejuni
N-glycan)

IT Gene, microbial

RL: BSU (Biological study, unclassified); BIOL (Biological study)
(pncB, claimed Salmonella gene mutated for attenuation;
recombinant Salmonella enterica strains presenting Campylobacter jejuni
N-glycan)
IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(poxA, claimed Salmonella gene mutated for attenuation;
recombinant Salmonella enterica strains presenting Campylobacter jejuni
N-glycan)
IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(pur, claimed Salmonella gene mutated for attenuation;
recombinant Salmonella enterica strains presenting Campylobacter jejuni
N-glycan)
IT Bos taurus
Cattle
DNA sequences
Feed additives
Food additives
Genetic engineering
Immunization
Livestock
Mouse
Mus musculus
Plasmid vectors
Poultry
Protein sequences
Salmonella enterica
Salmonella enterica enterica gallinarum
Salmonella enteritidis
Salmonella hadar
Salmonella heidelberg
Salmonella infantis
Salmonella kentucky
Salmonella typhimurium
Vaccines
(recombinant Salmonella enterica strains presenting Campylobacter
jejuni N-glycan)
IT Glycoconjugates
Lipid A
O antigen
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(recombinant Salmonella enterica strains presenting Campylobacter
jejuni N-glycan)
IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(rfc, claimed Salmonella gene mutated for attenuation;
recombinant Salmonella enterica strains presenting Campylobacter jejuni
N-glycan)
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L133 ANSWER 7 OF 27 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2009:694425 CAPLUS Full-text
DOCUMENT NUMBER: 151:73220
TITLE: O-antigen-negative Salmonella enterica serovar
typhimurium is attenuated in intestinal
colonization but elicits colitis in
streptomycin-treated mice
AUTHOR(S): Ilg, Karin; Endt, Kathrin; Misselwitz, Benjamin;

Stecher, Barbel; Aebi, Markus; Hardt, Wolf-Dietrich
CORPORATE SOURCE: Institut fur Mikrobiologie, Eidgenossische Technische Hochschule, ETH Zurich, Zurich, CH-8093, Switz.
SOURCE: Infection and Immunity (2009), 77(6), 2568-2575 CODEN: INFIBR; ISSN: 0019-9567
PUBLISHER: American Society for Microbiology
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Lipopolysaccharide (LPS) is a major constituent of the outer membrane and an important virulence factor of Salmonella enterica subspecies 1 serovar Typhimurium (serovar Typhimurium). To evaluate the role of LPS in eliciting intestinal inflammation in streptomycin-treated mice, we constructed an O-antigen-deficient serovar Typhimurium strain through deletion of the wbaP gene. The resulting strain was highly susceptible to human complement activity and the antimicrobial peptide mimic polymyxin B. Furthermore, it showed a severe defect in motility and an attenuated phenotype in a competitive mouse infection experiment, where the ΔwbaP strain (SKI12) was directly compared to wild-type Salmonella. Nevertheless, the ΔwbaP strain (SKI12) efficiently invaded HeLa cells in vitro and elicited acute intestinal inflammation in streptomycin-pretreated mice. These expts. prove that the presence of complete LPS is not essential for in vitro invasion or for triggering acute colitis.
CC 10-6 (Microbial, Algal, and Fungal Biochemistry)
Section cross-reference(s): 1, 13
IT Colitis
Intestine
Mouse
Mus musculus
Salmonella typhimurium
(O-antigen-neg. Salmonella typhimurium is attenuated in intestinal colonization but elicits colitis in streptomycin-treated mice)
IT Lipopolysaccharides
O antigen
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(O-antigen-neg. Salmonella typhimurium is attenuated in intestinal colonization but elicits colitis in streptomycin-treated mice)
IT 57-92-1, Streptomycin
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(O-antigen-neg. Salmonella typhimurium is attenuated in intestinal colonization but elicits colitis in streptomycin-treated mice)
OS.CITING REF COUNT: 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD (4 CITINGS)
REFERENCE COUNT: 45 THERE ARE 45 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L133 ANSWER 8 OF 27 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2007:357849 CAPLUS Full-text
DOCUMENT NUMBER: 146:336130
TITLE: Intranasal immunization with heterologously expressed polysaccharide protects against multiple Pseudomonas aeruginosa infections
AUTHOR(S): DiGiandomenico, Antonio; Rao, Jayasimha; Harcher, Katie; Zaidi, Tanweer S.; Gardner, Jason; Neely, Alice N.; Pier, Gerald B.; Goldberg, Joanna B.
CORPORATE SOURCE: Dep. Microbiol., Univ. Virginia Health System, Charlottesville, VA, 22908, USA
SOURCE: Proceedings of the National Academy of Sciences of the

United States of America (2007), 104(11), 4624-4629
CODEN: PNASA6; ISSN: 0027-8424
PUBLISHER: National Academy of Sciences
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Surface-expressed bacterial polysaccharides are often immunodominant, protective antigens. However, these antigens are chemical and serol. highly heterogeneous, and conjugation to protein carriers is often necessary to enhance their immunogenicity. Here the authors show the efficacy of intranasal immunization of mice with attenuated Salmonella enterica typhimurium expressing the O antigen portion of P. aeruginosa lipopolysaccharide. P. aeruginosa is an ideal model system because it can cause a myriad of localized and systemic infections. In particular, this bacterium is a leading cause of hospital-acquired pneumonia and is responsible for infections after burns and after eye injury. In addition, there are mouse models of infection that mimic the clin. manifestations of P. aeruginosa infections. Immunized mice were highly protected against infection, with long-lasting immunity to acute P. aeruginosa pneumonia, whereas mice immunized with Salmonella containing only the cloning vector or PBS were not. Prophylactic and therapeutic administration of sera from vaccinated animals protected naive mice. Intranasal vaccination also provided complete protection from infections after burns and reduced pathol. after corneal abrasions. Thus, intranasal delivery of heterologously expressed polysaccharide antigens provides protection at distinct sites of infection. This approach for the expression and delivery of polysaccharide antigens as recombinant immunogens could be easily adapted to develop vaccines for many infectious agents, without the need for complicated purification and conjugation procedures.

CC 15-2 (Immunochemistry)

IT Lipopolysaccharides
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(bacterial; heterologous expression of Pseudomonas aeruginosa lipopolysaccharide O antigen in attenuated Salmonella vector as intranasal vaccine)

IT Pseudomonas aeruginosa
Salmonella enterica typhimurium
(heterologous expression of Pseudomonas aeruginosa lipopolysaccharide O antigen in attenuated Salmonella vector as intranasal vaccine)

IT O antigen
RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(heterologous expression of Pseudomonas aeruginosa lipopolysaccharide O antigen in attenuated Salmonella vector as intranasal vaccine)

IT Vaccines
(nasal; heterologous expression of Pseudomonas aeruginosa lipopolysaccharide O antigen in attenuated Salmonella vector as intranasal vaccine)

IT Antigens
RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(protective; heterologous expression of Pseudomonas aeruginosa lipopolysaccharide O antigen in attenuated Salmonella vector as intranasal vaccine)

OS.CITING REF COUNT: 19 THERE ARE 19 CAPLUS RECORDS THAT CITE THIS RECORD (19 CITINGS)
REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L133 ANSWER 9 OF 27 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2006:1056021 CAPLUS Full-text
DOCUMENT NUMBER: 145:354218
TITLE: Down-regulation of key virulence factors makes the Salmonella enterica serovar Typhimurium rfaH mutant a promising live-attenuated vaccine candidate
AUTHOR(S): Nagy, Gabor; Danino, Vittoria; Dobrindt, Ulrich; Pallen, Mark; Chaudhuri, Roy; Emody, Levente; Hinton, Jay C.; Hacker, Jorg
CORPORATE SOURCE: Department of Medical Microbiology and Immunology, University of Pecs, Pecs, 7624, Hung.
SOURCE: Infection and Immunity (2006), 74(10), 5914-5925
CODEN: INFIBR; ISSN: 0019-9567
PUBLISHER: American Society for Microbiology
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Mutants of Salmonella enterica serovar Typhimurium that lack the transcriptional regulator RfaH are efficient as live oral vaccines against salmonellosis in mice. The authors show that the attenuation of the vaccine candidate strain is associated with reduced net growth in epithelial and macrophage cells. To identify the relevant RfaH-dependent genes, the RfaH regulon was determined with S. enterica serovars Enteritidis and Typhimurium using whole-genome Salmonella microarrays. As well as impacting the expression of genes involved in lipopolysaccharide (LPS) core and O-antigen synthesis, the loss of RfaH results in a marked down-regulation of SPI-4 genes, the flagellum/chemotaxis system, and type III secretion system 1. However, a proportion of these effects could have been the indirect consequence of the altered expression of genes required for LPS biosynthesis. Direct and indirect effects of the rfaH mutation were dissociated by genome-wide transcriptional profiling of a structural deep-rough LPS mutant (waaG). The authors show that truncation of LPS itself is responsible for the decreased intracellular yield observed for ΔrfaH strains. LPS mutants do not differ in replication ability; rather, they show increased susceptibility to antimicrobial peptides in the intracellular milieu. Evidence that deletion of rfaH, as well as some other genes involved in LPS biosynthesis, results in enhanced invasion of various mammalian cells is shown. Exposure of common minor antigens in the absence of serovar-specific antigens might be responsible for the observed cross-reactive nature of the elicited immune response upon vaccination. Increased invasiveness of the Salmonella rfaH mutant into antigen-presenting cells, combined with increased intracellular killing and the potential for raising a cross-protective immune response, renders the rfaH mutant an ideal vaccine candidate.

CC 15-2 (Immunochemistry)
IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(SPI-4; down-regulation of key virulence factors makes the Salmonella enterica serovar Typhimurium rfaH mutant a promising live-attenuated vaccine candidate)
IT Lipopolysaccharides
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(bacterial; down-regulation of key virulence factors makes the Salmonella enterica serovar Typhimurium rfaH mutant a promising live-attenuated vaccine candidate)
IT Antigen-presenting cell
Epithelium
Gene expression profiles, microbial
Macrophage
Regulon
Salmonella enterica typhimurium
Vaccines

Virulence (microbial)
(down-regulation of key virulence factors makes the Salmonella enterica serovar Typhimurium rfaH mutant a promising live-attenuated vaccine candidate)
IT O antigen
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(down-regulation of key virulence factors makes the Salmonella enterica serovar Typhimurium rfaH mutant a promising live-attenuated vaccine candidate)
IT Antimicrobial agents
(peptide; down-regulation of key virulence factors makes the Salmonella enterica serovar Typhimurium rfaH mutant a promising live-attenuated vaccine candidate)
IT Transcription factors
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(rfaH; down-regulation of key virulence factors makes the Salmonella enterica serovar Typhimurium rfaH mutant a promising live-attenuated vaccine candidate)
IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(waaG; down-regulation of key virulence factors makes the Salmonella enterica serovar Typhimurium rfaH mutant a promising live-attenuated vaccine candidate)
IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(waaL; down-regulation of key virulence factors makes the Salmonella enterica serovar Typhimurium rfaH mutant a promising live-attenuated vaccine candidate)
IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(waaP; down-regulation of key virulence factors makes the Salmonella enterica serovar Typhimurium rfaH mutant a promising live-attenuated vaccine candidate)
IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(waaY; down-regulation of key virulence factors makes the Salmonella enterica serovar Typhimurium rfaH mutant a promising live-attenuated vaccine candidate)
IT 1404-26-8, Polymyxin B
RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(down-regulation of key virulence factors makes the Salmonella enterica serovar Typhimurium rfaH mutant a promising live-attenuated vaccine candidate)
OS.CITING REF COUNT: 24 THERE ARE 24 CAPLUS RECORDS THAT CITE THIS RECORD (24 CITINGS)
REFERENCE COUNT: 62 THERE ARE 62 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L133 ANSWER 10 OF 27 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2007:1066806 CAPLUS Full-text
DOCUMENT NUMBER: 148:353607
TITLE: Synthesis and immunogenicity in mice of conjugate vaccine of Salmonella paratyphi A O-SP bound to tetanus toxoid
AUTHOR(S): Zhao, Zhi-qiang; Yang, Zhao-hui; Ji, Yong-li; Du, Lin; Xie, Gui-lin
CORPORATE SOURCE: Lanzhou Institute of Biological Products, Lanzhou, 730046, Peop. Rep. China
SOURCE: Zhonghua Weishengwuxue He Mianyixue Zazhi (2006),

26(11), 1048-1052
CODEN: ZWMZDP; ISSN: 0254-5101
PUBLISHER: Beijing Shengwu Zhipin Yanjiuso
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

AB The objective is to develop polysaccharide-protein conjugate vaccine for preventing Salmonella paratyphi A infection. Salmonella paratyphi A NTP-6 strain was fermented, then LPS was extracted with hot-Ph method and detoxified with 1% acetic acid at 100 °C for 1.5 h; the O-SP mixture was purified with Sephadex G-75, and the first and second peak were collected as effective polysaccharide antigen. O-SP was activated with CDAP, bound to TT with ADH as a spacer, and condensed with EDAC. Solns. of 2.5 μg of saccharide, alone or as conjugate, were injected s.c. into young mice. Antibodies against LPS in serum of the mice were measured by ELISA. Complement-mediated bactericidal activity was also assayed. The safety of conjugate vaccine was evaluated in mice and guinea pig. After the second injection, the mean geometric titer (GMT) of anti-LPS IgG increased by more than 4 times, and the third injection showed significantly booster response. In the complement-mediated bactericidal activity test, the titers of antiserum were above 1:1280. In mice and guinea pig, conjugate vaccine had not shown any harmful effect. A Salmonella paratyphi A conjugate vaccine preparation procedure was successfully constructed. The TI antigen of O-SP was effectively converted into TD antigen; clin. evaluation of S. paratyphi A conjugate vaccine is planned.

CC 15-10 (Immunochemistry)

IT Antigens
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(polysaccharide; synthesis and immunogenicity in mice of conjugate vaccine of Salmonella paratyphi A O-SP bound to tetanus toxoid)

IT Blood serum
Immunity
Salmonella paratyphi-A
Vaccines
(synthesis and immunogenicity in mice of conjugate vaccine of Salmonella paratyphi A O-SP bound to tetanus toxoid)

IT Lipopolysaccharides
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(synthesis and immunogenicity in mice of conjugate vaccine of Salmonella paratyphi A O-SP bound to tetanus toxoid)

L133 ANSWER 11 OF 27 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2005:1289148 CAPLUS Full-text
DOCUMENT NUMBER: 144:35285
TITLE: Live, oral vaccine for protection against Shigella dysenteriae serotype 1
INVENTOR(S): Kopecko, Dennis J.; Xu, Deqi
PATENT ASSIGNEE(S): United States Dept. of Health and Human Services, USA
SOURCE: PCT Int. Appl., 55 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005116063	A1	20051208	WO 2005-US18198	20050524

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,

```
            GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ,
            LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA,
            NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK,
            SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU,
            ZA, ZM, ZW
         RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
            AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
            EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT,
            RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,
            MR, NE, SN, TD, TG
     EP 1756149          A1    20070228    EP 2005-754091          20050524
         R:  AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
             IS, IT, LI, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR
     US 20080193486      A1    20080814    US 2007-597301          20070921
PRIORITY APPLN. INFO.:                    US 2004-574279P     P   20040524
                                          US 2004-609494P     P   20040913
                                          WO 2005-US18198     W   20050524
AB    The authors disclose the mol. cloning and functional characterization of the
rfb locus and rfp plasmid gene of Shigella dysenteriae.  The products of the genes
are shown to be sufficient for the biosynthesis core-linked O-specific
polysaccharide in bacterial vectors.  When expressed in vaccine delivery systems,
the O-specific polysaccharide may provide protective immunity against shigellosis.
IPCI C07K0014-25 [ICM,7]; C07K0014-195 [ICM,7,C*]; A61K0039-112 [ICS,7]
IPCR C07K0014-195 [I,C*]; C07K0014-25 [I,A]; C12N0015-52 [I,C*]; C12N0015-52
     [I,A]
CC   15-2 (Immunochemistry)
     Section cross-reference(s): 3, 7, 10, 14
IT   Dysentery
     Human
     Prophylaxis
       Salmonella typhi
     Shigella dysenteriae
        (Shigella dysenteriae O-polysaccharide biosynthetic enzymes expressed
        in bacterial vectors as oral vaccine against dysentery)
IT   O antigen
     RL: BPN (Biosynthetic preparation); THU (Therapeutic use); BIOL
     (Biological study); PREP (Preparation); USES (Uses)
        (Shigella dysenteriae O-polysaccharide biosynthetic enzymes
        expressed in bacterial vectors as oral vaccine against dysentery)
IT   Lipopolysaccharides
     RL: BSU (Biological study, unclassified); BIOL (Biological study)
        (bacterial; cloning of Shigella dysenteriae biosynthetic enzymes for
        O-antigenic polysaccharide of)
IT   Plasmid vectors
        (for expression of Shigella dysenteriae O-polysaccharide biosynthetic
        enzymes in attenuated bacteria)
IT   Promoter (genetic element)
     RL: BSU (Biological study, unclassified); BIOL (Biological study)
        (of rfb locus for expression of Shigella dysenteriae O-polysaccharide
        biosynthetic enzymes in attenuated bacteria)
REFERENCE COUNT:         14    THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L133 ANSWER 12 OF 27  CAPLUS  COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER:        1999:8105  CAPLUS  Full-text
DOCUMENT NUMBER:         130:71518
TITLE:                   Live attenuated bacterial vaccines
                         containing a modified iron uptake fur
                         gene
INVENTOR(S):             Baldwin, Thomas John; Borriello, Saverio Peter;
```

Palmer, Helen Mary
PATENT ASSIGNEE(S): Medical Research Council, UK
SOURCE: PCT Int. Appl., 49 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9856901	A2	19981217	WO 1998-GB1683	19980609
WO 9856901	A3	19990318		
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
CA 2292900	A1	19981217	CA 1998-2292900	19980609
AU 9880268	A	19981230	AU 1998-80268	19980609
AU 745003	B2	20020307		
EP 996712	A2	20000503	EP 1998-928436	19980609
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
BR 9809974	A	20010918	BR 1998-9974	19980609
JP 2002511752	T	20020416	JP 1999-501891	19980609
PRIORITY APPLN. INFO.:			GB 1997-11964 A	19970609
			WO 1998-GB1683 W	19980609

AB An attenuated bacterium in which the native fur gene, or homolog thereof, is modified such that the expression of the fur gene product, or homolog thereof, is regulated independently of the iron concentration in the environment of the bacterium, is suitable for use as a live vaccine. This has important implications in the manufacture of live vaccines since the increased expression of the protective antigens during the manufacture process will increase the efficacy of the live vaccine when administered to an animal or human subject. For alterations in the fur gene it is essential not to have a complete knockout mutant since this may be lethal. Thus, the fur gene may be placed under the control of another promoter which can be switched on or off independently of the factors (iron) which normally controls fur expression. Preferably, the bacterium is also attenuated by mutation of at least one gene essential for the production of a metabolite or catabolite not produced by a human or animal; such mutations may be in an aro gene such as an aroB gene and/or aroL gene and/or a gene of the pur or pyr pathways. The bacterium may be, in particular, Neisseria meningitidis. IPCI C12N0015-00 [ICM,6]

IPCR C12N0015-09 [I,C*]; C12N0015-09 [I,A]; A61K0039-00 [N,C*]; A61K0039-00 [N,A]; A61K0039-095 [I,C*]; A61K0039-095 [I,A]; A61K0039-10 [I,C*]; A61K0039-10 [I,A]; A61K0039-102 [I,C*]; A61K0039-102 [I,A]; A61K0039-104 [I,C*]; A61K0039-104 [I,A]; A61K0039-108 [I,C*]; A61K0039-108 [I,A]; A61K0039-112 [I,C*]; A61K0039-112 [I,A]; A61P0031-00 [I,C*]; A61P0031-04 [I,A]; C07K0014-195 [I,C*]; C07K0014-22 [I,A]; C12N0001-20 [I,C*]; C12N0001-20 [I,A]; C12N0001-21 [I,C*]; C12N0001-21 [I,A]; C12R0001-36 [N,A]

CC 63-3 (Pharmaceuticals)
Section cross-reference(s): 3, 10

ST bacteria vaccine attenuation fur gene; Neisseria vaccine attenuation fur gene

IT Transcription factors

RL: BSU (Biological study, unclassified); BIOL (Biological study)
(fur (ferric uptake regulation), mutation of gene
fur for; live attenuated bacterial vaccines containing a
modified iron uptake fur gene)
IT Proteins, specific or class
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(Op (opacity protein), mutation of gene opc for; live
attenuated bacterial vaccines containing a modified iron uptake
fur gene)
IT Gene, microbial
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(aro; live attenuated bacterial vaccines containing a modified
iron uptake fur gene)
IT Gene, microbial
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(aroB; live attenuated bacterial vaccines containing a modified
iron uptake fur gene)
IT Gene, microbial
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(aroL; live attenuated bacterial vaccines containing a modified
iron uptake fur gene)
IT Gene, microbial
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(asd; live attenuated bacterial vaccines containing a modified
iron uptake fur gene)
IT Mutagenesis
(attenuating; live attenuated bacterial vaccines
containing a modified iron uptake fur gene)
IT Gene, microbial
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(comA; live attenuated bacterial vaccines containing a modified
iron uptake fur gene)
IT Gene, microbial
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(fur; live attenuated bacterial vaccines containing a
modified iron uptake fur gene)
IT Gene, microbial
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(galE; live attenuated bacterial vaccines containing a modified
iron uptake fur gene)
IT Enzymes, biological studies
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(gene recA, mutation of gene recA for; live
attenuated bacterial vaccines containing a modified iron uptake
fur gene)
IT Bacteria (Eubacteria)
Bordetella pertussis
Escherichia coli
Gram-negative bacteria
Haemophilus influenzae
Helicobacter pylori
Neisseria gonorrhoeae
Neisseria meningitidis
Pseudomonas aeruginosa
Salmonella typhi
Salmonella typhimurium
Shigella
Vibrio cholerae
(live attenuated bacterial vaccines containing a modified iron
uptake fur gene)

IT Gene, microbial
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(minB; live attenuated bacterial vaccines containing a modified iron uptake fur gene)
IT Gene, microbial
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(opc; live attenuated bacterial vaccines containing a modified iron uptake fur gene)
IT Gene, microbial
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(pur; live attenuated bacterial vaccines containing a modified iron uptake fur gene)
IT Gene, microbial
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(purB; live attenuated bacterial vaccines containing a modified iron uptake fur gene)
IT Gene, microbial
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(purE; live attenuated bacterial vaccines containing a modified iron uptake fur gene)
IT Gene, microbial
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(pyr; live attenuated bacterial vaccines containing a modified iron uptake fur gene)
IT Gene, microbial
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(pyrA; live attenuated bacterial vaccines containing a modified iron uptake fur gene)
IT Gene, microbial
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(pyrB; live attenuated bacterial vaccines containing a modified iron uptake fur gene)
IT Gene, microbial
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(recA; live attenuated bacterial vaccines containing a modified iron uptake fur gene)
IT Vaccines
(synthetic; live attenuated bacterial vaccines containing a modified iron uptake fur gene)
IT 37211-77-1, 3-Dehydroquinate synthase
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(mutation of gene aroB for; live attenuated bacterial vaccines containing a modified iron uptake fur gene)
IT 9031-51-0, Shikimate kinase
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(mutation of gene aroL for; live attenuated bacterial vaccines containing a modified iron uptake fur gene)
IT 9000-98-0, Aspartate semialdehyde dehydrogenase
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(mutation of gene asd for; live attenuated bacterial vaccines containing a modified iron uptake fur gene)
IT 9032-89-7, UDP-galactose 4-epimerase
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(mutation of gene galE for; live attenuated bacterial vaccines containing a modified iron uptake fur gene)
IT 9027-81-0, Adenylosuccinate lyase

RL: BSU (Biological study, unclassified); BIOL (Biological study)
(mutation of gene purB for; live attenuated
bacterial vaccines containing a modified iron uptake fur
gene)
IT 9032-04-6, Phosphoribosylaminoimidazole carboxylase
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(mutation of gene purE for; live attenuated
bacterial vaccines containing a modified iron uptake fur
gene)
IT 9026-23-7, Carbamyl phosphate synthetase
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(mutation of gene pyrA for; live attenuated
bacterial vaccines containing a modified iron uptake fur
gene)
IT 9012-49-1, Aspartate transcarbamylase
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(mutation of gene pyrB for; live attenuated
bacterial vaccines containing a modified iron uptake fur
gene)
OS.CITING REF COUNT: 6 THERE ARE 6 CAPLUS RECORDS THAT CITE THIS RECORD (6 CITINGS)
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L133 ANSWER 13 OF 27 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 1993:140868 CAPLUS Full-text
DOCUMENT NUMBER: 118:140868
ORIGINAL REFERENCE NO.: 118:24095a,24098a
TITLE: Molecular cloning and characterization of the genetic determinants that express the complete Shigella serotype D (Shigella sonnei) lipopolysaccharide in heterologous live attenuated vaccine strains
AUTHOR(S): Viret, Jean Francois; Cryz, Stanley J., Jr.; Lang, Alois B.; Favre, Didier
CORPORATE SOURCE: Swiss Serum Vaccine Inst., Bern, CH-3018, Switz.
SOURCE: Molecular Microbiology (1993), 7(2), 239-52
CODEN: MOMIEE; ISSN: 0950-382X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The genetic determinants for the complete S. sonnei lipopolysaccharide (LPS) were cloned, characterized by restriction mapping, and expressed in heterologous genetic backgrounds, including Salmonella typhi and Vibrio cholerae live attenuated vaccine strains. The rfb/rfc locus encoding the polymerized serotype-specific O polysaccharide was mapped within 23 kb of DNA isolated from S. sonnei virulence plasmid pWR105. A highly similar chromosomal DNA sequence was identified by Southern hybridization anal. in Plesiomonas shigelloides known to have the same O serotype specificity as S. sonnei. Expression studies of the rfb/rfc locus have shown that S. sonnei O polysaccharide is covalently bound to LPS cores of both the K-12 and R1 types, but neither to Salmonella (Ra-type) nor to V. cholerae O1 cores. In order to express a compatible core structure in the latter organisms, chromosomal rfa loci encoding R1-type LPS were isolated from both an Escherichia coli R1 strain (rfaR1) and from S. sonnei (rfasonnei). Restriction mapping and functional anal. of cloned DNA allowed localization of the rfaR1 locus and its orientation with respect to the neighboring cysE chromosomal marker. A high degree of sequence similarity was found at the DNA level between rfa loci of enterobacterial species characterized by R1-type LPS. Co-expression studies involving S. sonnei rfb/rfc and rfa loci propagated on compatible plasmids have shown that, at most, 13 to 14 kb of rfaR1 DNA are required for the expression of complete phase-I-like S. sonnei LPS in E. coli K-12 and S.

typhi, whereas an adjacent region of about 3.5 kb is needed in the more stringent host, V. cholerae. S. sonnei O antigen expressed in a V. cholerae recombinant vaccine strain is present on the cell surface in a form suitable for the induction of a specific antibody response in vaccinated rabbits.

CC 3-2 (Biochemical Genetics)
Section cross-reference(s): 15, 63

IT Lipopolysaccharides
RL: BIOL (Biological study)
(genes for, of Shigella sonnei serotype D, cloning and mapping of)

IT Salmonella typhi
Vibrio cholerae
(lipopolysaccharide genes of Shigella sonnei serotype D cloning and expression in live attenuated vaccine strains of)

IT Molecular cloning
(of lipopolysaccharide genes, of Shigella sonnei serotype D, in live attenuated oral vaccine strains)

IT Antigens
RL: BIOL (Biological study)
(O, genes for, of Shigella sonnei, mapping and expression in live attenuated vaccine strains of)

OS.CITING REF COUNT: 16 THERE ARE 16 CAPLUS RECORDS THAT CITE THIS RECORD (17 CITINGS)

L133 ANSWER 14 OF 27 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 1988:427599 CAPLUS Full-text
DOCUMENT NUMBER: 109:27599
ORIGINAL REFERENCE NO.: 109:4621a,4624a
TITLE: Preparation and use of recombinant avirulent Salmonella strains as vaccines against cholera
INVENTOR(S): Morona, Renato
PATENT ASSIGNEE(S): Enterovax Research Pty. Ltd., Australia
SOURCE: Eur. Pat. Appl., 14 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
EP 257837	A1	19880302	EP 1987-306833		19870731
R: AT, BE, CH, DE, ES, FR, GB, GR, IT, LI, LU, NL, SE					
AU 8776269	A	19880225	AU 1987-76269		19870728
AU 615416	B2	19911003			
DK 8704290	A	19880220	DK 1987-4290		19870818
AU 8941023	A	19900308	AU 1989-41023		19880901
US 5110588	A	19920505	US 1989-401403		19890901
PRIORITY APPLN. INFO.:			AU 1986-7545	A	19860819
			US 1987-86354	B2	19870817
			AU 1988-186	A	19880901
			AU 1988-1273	A	19881102

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB Recombinant avirulent Salmonella strains contain an Escherichia coli DNA sequence encoding the synthesis of a lipopolysaccharide core region. These strains, unlike the parent Salmonella strains, can efficiently express Vibrio cholerae O-somatic antigen gene carried on plasmids pPM1001-4. E. coli EX170 (an Hfr strain with a chloramphenicol marker adjacent to the rfa locus, i.e. the region encoding the enzymes responsible for core lipopolysaccharide synthesis) was mated with S. typhimurium LB5010. Chloramphenicol Salmonella exconjugants which carried the E. coli core lipopolysaccharide on their surfaces were identified. This strain (EX200)

could express the Vibrio cholera O-antigen when transformed with O-antigen-encoding plasmid pEVX8 or pEVX9 (as determined by anti-Vibrio antiserum agglutination tests). IPCI C12N0015-00 [ICM,4]; A61K0039-108 [ICS,4]; A61K0039-112 [ICS,4]; A61K0039-106 [ICS,4]
IPCR C12N0001-20 [I,C*]; C12N0001-20 [I,A]; A61K0039-00 [N,C*]; A61K0039-00 [N,A]; C07K0014-195 [I,C*]; C07K0014-28 [I,A]; C12N0015-74 [I,C*]; C12N0015-74 [I,A]; C12R0001-01 [N,A]; C12R0001-19 [N,A]
CC 63-3 (Pharmaceuticals)
Section cross-reference(s): 15
IT Salmonella
Salmonella typhi
Salmonella typhimurium
(avirulent, recombinant, expression of Vibrio cholerae O-antigen-synthesizing enzyme genes in)
IT lipopolysaccharides
RL: BIOL (Biological study)
(core region of, synthesis of, genes of Escherichia coli for, expression in avirulent Salmonella of Vibrio cholerae O-antigen-synthesizing enzyme genes and)
IT Antigens
RL: BIOL (Biological study)
(O, of Vibrio cholerae, genes for synthesis of, expression in avirulent recombinant Salmonella of)
OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

L133 ANSWER 15 OF 27 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 1975:560501 CAPLUS Full-text
DOCUMENT NUMBER: 83:160501
ORIGINAL REFERENCE NO.: 83:25179a,25182a
TITLE: Membrane-associated nucleotide sugar reactions. Influence of mutations affecting lipopolysaccharide on the first enzyme of O-antigen synthesis
AUTHOR(S): Rundell, Kathleen; Shuster, Charles W.
CORPORATE SOURCE: Sch. Med., Case West. Reserve Univ., Cleveland, OH, USA
SOURCE: Journal of Bacteriology (1975), 123(3), 928-36
CODEN: JOBAAY; ISSN: 0021-9193
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Both the synthesis of lipopolysaccharide O-antigen and the synthesis of peptidoglycan in Salmonella typhimurium proceed via membrane-bound glycosylated lipid intermediates. The 1st enzyme of each pathway transfers a sugar phosphate from a nucleotide sugar to the glycosyl carrier lipid (P-GCL). Each enzyme catalyzes an exchange reaction between the reaction product UMP and the nucleotide sugar substrate. Several strains of S. typhimurium defective in lipopolysaccharide synthesis accumulate glycosylated lipid intermediates. In addition, strains lysogenic for phage P22 synthesize a glucose derivative of the carrier lipid. These strains were used to demonstrate the P-GCL requirement of the exchange reaction catalyzed by galactose-diphosphoglycosyl carrier lipid (GCL-PP-Gal) synthetase, the 1st enzyme of O-antigen synthesis. Enzyme activity is greatly reduced when glycosylated P-GCL accumulates on the cytoplasmic membrane. The exchange reaction catalyzed by the 1st enzyme of peptidoglycan synthesis is unaffected by the accumulation of O-antigen fragments on the carrier lipid and may interact with a different pool of P-GCL within the membrane. GCL-PP-Gal synthetase activity cannot be detected in the membranes of 2 rfa mutants that synthesize incomplete lipopolysaccharide core. Either the synthesis of GCL-PP-Gal synthetase or the stable integration of the enzyme into the membrane

structure may be disrupted in the rfa mutants. Peptidoglycan synthesis is unaffected by the mutations affecting the core glycosyltransferases.
CC 10-2 (Microbial Biochemistry)
Section cross-reference(s): 15
IT Antigens
RL: BIOL (Biological study)
(O, synthesis by Salmonella, membrane nucleotide effect on)
IT Salmonella typhimurium
(O-antigen synthesis by, membrane nucleotide effects on)
IT Lipopolysaccharides
RL: BIOL (Biological study)
(of Salmonella, enzymic antigen synthesis in relation to)
OS.CITING REF COUNT: 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD (4 CITINGS)

L133 ANSWER 16 OF 27 WPIX COPYRIGHT 2010 THOMSON REUTERS on STN
ACCESSION NUMBER: 2002-049352 [200206] WPIX
DOC. NO. CPI: C2002-013898 [200206]
TITLE: Microorganism useful as a vaccine for immunizing vertebrates, comprises a regulated antigen delivery system with a runaway vector and genes encoding a repressor whose synthesis is under control of an activatible control sequence
DERWENT CLASS: B04; C06; D16
INVENTOR: CURTIS R; CURTISS R; TINGE S; TINGE S A; CURTISS; TINGE A
PATENT ASSIGNEE: (AVAN-N) AVANT IMMUNOTHERAPEUTICS INC; (CURT-I) CURTIS R; (CURT-I) CURTISS R; (MEGA-N) MEGAN HEALTH INC; (TING-I) TINGE S A; (UNIW-C) UNIV WASHINGTON
COUNTRY COUNT: 93

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 2001083785	A2	20011108	(200206)*	EN	95[23]	
AU 2001066560	A	20011112	(200222)	EN		
EP 1292687	A2	20030319	(200322)	EN		
CN 1433474	A	20030730	(200365)	ZH		
HU 2003000793	A2	20030728	(200379)	HU		
NZ 522433	A	20040430	(200431)	EN		
ZA 2002009267	A	20040428	(200432)	EN	110	
JP 2004515210	T	20040527	(200435)	JA	168	
BR 2001010408	A	20040622	(200442)	PT		
US 20040137003	A1	20040715	(200447)	EN		
US 6780405	B1	20040824	(200457)	EN		
US 20050106176	A1	20050519	(200534)	EN		
MX 2002010690	A1	20040801	(200548)	ES		
EP 1292687	B1	20060816	(200655)	EN		
DE 60122326	E	20060928	(200664)	DE		
ES 2271031	T3	20070416	(200728)	ES		
DE 60122326	T2	20070830	(200758)	DE		
US 7341860	B2	20080311	(200820)	EN		
IN 2002DN01086	A	20100305	(201028)	EN		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE

WO 2001083785 A2	WO 2001-US13915 20010430
US 6780405 B1	US 2000-560539 20000428
US 20050106176 A1 Div Ex	US 2000-560539 20000428
US 7341860 B2 Div Ex	US 2000-560539 20000428
AU 2001066560 A	AU 2001-66560 20010430
BR 2001010408 A	BR 2001-10408 20010430
CN 1433474 A	CN 2001-810533 20010430
DE 60122326 E	DE 2001-60122326 20010430
DE 60122326 T2	DE 2001-60122326 20010430
EP 1292687 A2	EP 2001-944119 20010430
EP 1292687 B1	EP 2001-944119 20010430
DE 60122326 E	EP 2001-944119 20010430
ES 2271031 T3	EP 2001-944119 20010430
DE 60122326 T2	EP 2001-944119 20010430
JP 2004515210 T	JP 2001-580392 20010430
NZ 522433 A	NZ 2001-522433 20010430
EP 1292687 A2	WO 2001-US13915 20010430
HU 2003000793 A2	WO 2001-US13915 20010430
NZ 522433 A	WO 2001-US13915 20010430
JP 2004515210 T	WO 2001-US13915 20010430
BR 2001010408 A	WO 2001-US13915 20010430
US 20040137003 A1	WO 2001-US13915 20010430
MX 2002010690 A1	WO 2001-US13915 20010430
EP 1292687 B1	WO 2001-US13915 20010430
DE 60122326 E	WO 2001-US13915 20010430
DE 60122326 T2	WO 2001-US13915 20010430
MX 2002010690 A1	MX 2002-10690 20021028
ZA 2002009267 A	ZA 2002-9267 20021114
HU 2003000793 A2	HU 2003-793 20010430
US 20040137003 A1	US 2004-258931 20040112
US 20050106176 A1	US 2004-924574 20040824
US 7341860 B2	US 2004-924574 20040824
IN 2002DN01086 A PCT Application	WO 2001-US13915 20010430
IN 2002DN01086 A	IN 2002-DN1086 20021101

FILING DETAILS:

PATENT NO	KIND	PATENT NO
DE 60122326 E	Based on	EP 1292687 A
ES 2271031 T3	Based on	EP 1292687 A
DE 60122326 T2	Based on	EP 1292687 A
US 20050106176 A1	Div ex	US 6780405 B
AU 2001066560 A	Based on	WO 2001083785 A
EP 1292687 A2	Based on	WO 2001083785 A
HU 2003000793 A2	Based on	WO 2001083785 A
NZ 522433 A	Based on	WO 2001083785 A
JP 2004515210 T	Based on	WO 2001083785 A
BR 2001010408 A	Based on	WO 2001083785 A
MX 2002010690 A1	Based on	WO 2001083785 A
EP 1292687 B1	Based on	WO 2001083785 A
DE 60122326 E	Based on	WO 2001083785 A
DE 60122326 T2	Based on	WO 2001083785 A
US 7341860 B2	Div ex	US 6780405 B

PRIORITY APPLN. INFO:	US 2000-560539	20000428
	US 2004-258931	20040112
	US 2004-924574	20040824

INT. PATENT CLASSIF.:

MAIN:	C12N015-09; C12N015-63
SECONDARY:	A61K039-00; A61K039-112; A61P037-04; C12N001-21; C12P021-02
IPC ORIGINAL:	A61K0039-00 [I,A]; A61K0039-00 [I,A]; A61K0039-00 [I,C]; A61K0045-00 [I,A]; A61K0045-00 [I,A]; A61K0045-00 [I,C]; C12N0001-20 [I,A]; C12N0001-20 [I,C]; C12N0001-21 [I,A]; C12N0001-21 [I,A]; C12N0001-21 [I,C]; C12N0015-63 [I,C]; C12N0015-63 [I,A]; C12N0015-63 [I,A]; C12N0015-63 [I,C]; C12N0015-74 [I,A]; C12N0015-74 [I,A]; C12N0015-74 [I,C]; C12P0021-06 [I,A]; C12P0021-06 [I,C]
IPC RECLASSIF.:	A01N0063-00 [I,A]; A01N0063-00 [I,C]; A61K0039-00 [I,A]; A61K0039-00 [I,C]; A61K0039-00 [I,A]; A61K0039-00 [I,C]; A61K0039-112 [I,A]; A61K0039-112 [I,C]; A61K0039-38 [I,A] ; A61K0039-38 [I,C]; A61K0048-00 [I,A]; A61K0048-00 [I,C] ; A61P0037-00 [I,C]; A61P0037-04 [I,A]; C12N0001-21 [I,A] ; C12N0001-21 [I,C]; C12N0015-09 [I,A]; C12N0015-09 [I,C] ; C12N0015-63 [I,A]; C12N0015-63 [I,C]; C12N0015-74 [I,A] ; C12N0015-74 [I,C]; C12P0021-02 [I,A]; C12P0021-02 [I,C] ; C12R0001-42 [N,A]
ECLA:	A61K0039-02M; A61K0039-09A; C12N0015-63A; C12N0015-74
ICO:	K61K0039:52B; K61K0039:52C; K61K0039:53; K61K0039:54A2; K61K0039:55V; K61K0039:555B7
USCLASS NCLM:	424/093.100; 424/184.100; 424/200.100
NCLS:	424/093.200; 424/093.400; 424/200.100; 435/252.300; 435/320.100; 435/471.000
JAP. PATENT CLASSIF.:	
MAIN/SEC.:	A61K0039-00 H; A61K0039-112; A61P0037-04; C12N0001-21; C12N0015-00 A (ZNA); C12P0021-02 C
FTERM CLASSIF.:	4B024; 4B064; 4B065; 4C085; 4C201; 4B024/AA01; 4C085/AA03; 4B024/AA11; 4B065/AA46.X; 4B065/AB01; 4B064/AG31; 4B065/BA02; 4C085/BA24; 4B024/BA80; 4B064/CA02; 4B024/CA04; 4B064/CA19; 4B065/CA24; 4B065/CA45; 4C085/CC07; 4B064/CC24; 4B064/DA01; 4B024/DA06; 4C085/DD01; 4B024/EA04; 4C085/EE01; 4B024/GA11; 4B024/HA12

BASIC ABSTRACT:

WO 2001083785 A2 UPAB: 20100430

NOVELTY - A microorganism (I) comprising a regulated antigen delivery system (RADS), comprising: (a) a vector (II) having: (i) a site (SI) for insertion of a desired gene; and (ii) a first origin of replication (ori) and a second ori conferring vector replication using DNA polymerase III and I, respectively; and

(b) a gene (III) encoding a first repressor (FR) operably linked to a first activatible control sequence, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) a runaway vector (IV) comprising (II); (2) producing a desired gene product comprising: (a) engineering a gene encoding the desired product into the vector of (I), where the microorganism comprises control sequences that repress expression of the second ori under an environmental condition, but in which the expression of the second ori is derepressed under a second environmental condition;

(b) culturing (I) under the first environmental condition; and (c) culturing the microorganism with the vector of (a) under the second environmental condition;

(3) a vaccine (V) for immunization of a vertebrate, where (V) comprises (I) in a carrier;

(4) inducing immunoprotection in a vertebrate comprising administering (V); and

(5) delivering a desired gene product to a vertebrate comprising administering (I).

ACTIVITY - Antibacterial; immunostimulant.
MECHANISM OF ACTION - Vaccine (claimed). The immunogenic properties of the RAV SeM vaccine strains were initially evaluated in BALB/c mice given about 10^7 colony forming units (CFU) of each strain intranasally on day 0 and day 28 without anesthesia. Only low levels of vaccine strains were recovered from the Lungs and Peyer's patches of the immunized mice 72 hours following immunization and similarly were rarely detected in feces of immunized mice following day 3. The serological immunoglobulin (Ig)G SeM specific antibody response detected indicated that all strains induced strong antibody immune response to the SeM antigen.
USE - (I) is useful for producing a desired gene product, preferably an antigen which is Ery65 or SeM. (I) is useful for delivering a desired gene product in a vertebrate. A vaccine (V) comprising (I) is useful for inducing immunoprotection in a vertebrate against antigens such as Ery65 which causes disease erysipelas and in later life can cause arthritis in swine and turkeys, and SeM which causes strangles in racehorses and other equines (all claimed).
ADVANTAGE - As a vaccine, the RADS is capable of causing an effective exposure of the immunized vertebrate's lymphoid tissues to a large dose of vector-encoded foreign gene product production in response to the withdrawal of the stimulus. The RADS microorganism can be grown in vitro under low copy number control, then switched to runaway conditions after vertebrate inoculation to cause an increase in antigen production in vivo. Under derepressed runaway conditions, the RADS microorganisms is highly impaired due to extremely high plasmid replication activity coupled with extremely high foreign gene product production. Because of its impaired state, the derepressed RADS microorganisms cannot generally survive for extended periods.
TECHNOLOGY FOCUS:
BIOTECHNOLOGY - Preferred Microorganism: (I) further comprises a gene encoding a desired gene product inserted into SI, where the gene encoding the desired gene product is operably linked to a second control sequence and where the first control sequence and the second control sequences are the same sequence or different sequences. The repressor is from LacI repressor and C2 repressor and the second control sequence is repressible by a second repressor. Preferably (I), which is an attenuated derivative of pathogenic bacterium, preferably Salmonella sp. comprises a plasmid pMEG-771 as (II). The gene product is an antigen preferably Erysipelothrix rhusiopathiae (Ery65) or Streptococcus equi (SeM), where the first activatible control sequence is araCPBAD , pSC ori and pUC ori as first and second ori respectively, P22 PR as first control sequence and C2 repressor as first repressor, Ptrc as a second control sequence where the sequence is repressible by a second repressor which is a LacI repressor. The desired gene product is operably linked to an eukaryotic control sequence. The microorganism further comprises a balanced lethal host vector system consisting of a lack of a functioning essential gene on the chromosome and a recombinant functioning copy of the essential gene on (II), where the essential gene is an asd gene which is preferably inactivated by the insertion of a repressor gene operably linked to araCPBAD. The microorganisms further comprise an inactivating mutation in a native gene selected from cya, crp, phoPQ, ompR, galE, cdt, hemA, aroA, aroC, aroD and htrA. The modified form of the microorganism further comprises an DELTAendA mutation. The microorganism exhibits delayed RADS characteristics, where the delayed RADS characteristics are conferred by an alteration selected from mutations that delay the loss of activator molecules by metabolism and/or leakage, a mutation or insertion to increase repressor concentration, and inclusion of a vector control sequence with binding sites for more than repressor and/or vector sequences encoding repressor molecules that act on a vector control sequence.
Preferred Method: In (2), the first environmental condition comprises the presence of arabinose and in vitro culture conditions, and

the second environmental condition comprises the absence of arabinose and conditions inside a vertebrate and a microorganism further comprising the inactivation deletion in the araCBAD operon and/or the araE gene

Production: (I) is produced by standard recombinant techniques.

EXTENSION ABSTRACT:

ADMINISTRATION - Administration of a vaccine (V) comprising (I) is oral, intranasal, gastric intubation or in the form of aerosols, although other methods of administering the antigen delivery microorganism are by intravenous, intramuscular, subcutaneous, intramammary, intrapenial, intrarectal or vaginal routes. Dosage of (V) is 1 x 10 to the power of 7 - 1 x 10 to the power of 11 colony forming units (CFU). EXAMPLE - The runaway vector (RAV) pMEG-573 encoding the Streptococcus equi SeM protein was obtained by cloning the polymerase chain reaction (PCR) fragment flanked by primers SeM444-474 GCGAACTCTGAGGTTAGTCGTACGGCGACTC and sEM1265-1233 TTGATCAATTTCTGCTAATTTTTGAGCCATTTC, containing the central portion of the SeM coding region from the SeM clone pSEM06, into the NcoI and BamHI sites of pMEG-546. pMEG-573 was only dependent on the presence of the DELTAilvG3::TTaraCPBAD1aclTT deletion/insertion mutation in the chromosome to repress the runaway phenotype and SeM expression. The vaccine strains for SeM also contained either the DELTAphoP1918 or DELTAphoP24 attenuating deletion mutation. A comparison of the level of SeM expression by different attenuated Salmonella vaccine strains, in which SeM expression on the plasmid vector was under the transcriptional control of either P22 PR, Ptrc or lambdaPL on pBR based plasmids, or under the control of Ptrc on the RAV, pMEG-573. Strains for this comparison were grown in Luria bertani broth for 6 hours either with or without 0.2 % arabinose following a 1/1000 dilution from non-aerated Luria Bertani broth cultures with 0.2 % arabinose. 1 ml of cells were then pelleted and total proteins were run on sodium dodecyl sulfate polyacryalamide gel electrophoresis (SDS-PAGE) for analysis by staining with Coomassie blue or transfer to nitrocellulose for western blot analysis with SeM specific antibody. The analysis showed that the amount of the SeM protein was substantially more in the bacterial strain, MGN-4598 (pMEG-573), with the RAV pMEG-573 than present in any of the other host-vector strains. Given that all plasmids in these strains contain the same SeM coding region found in pMEG-375, and the level of SeM expression obtained is not detectable on the Coomassie gel with any of the other strong promoters tested in MGN-4598 (pMEG-825) P22 PR, MGN-4598 (pMEG-826) Ptrc or -2238 (pMEG-575)lambda PL (all on pBR based plasmids), only the RAV constructs were ever evaluated in animals.

FILE SEGMENT: CPI

MANUAL CODE: CPI: B04-B04C1; B04-E03; B04-E03B; B04-E04; B04-E08; B04-F0100E; B04-F10A8E; B04-N0300E; B04-P0100E; B14-A01; B14-G01; C04-B04C1; C04-E03; C04-E03B; C04-E04; C04-E08; C04-F0100E; C04-F10A8E; C04-N0300E; C14-A01; C14-G01; D05-H07; D05-H12E; D05-H14A; D05-H16A; D05-H17

L133 ANSWER 17 OF 27 BIOSIS COPYRIGHT (c) 2010 The Thomson Corporation on STN DUPLICATE 1

ACCESSION NUMBER: 2009:183097 BIOSIS Full-text

DOCUMENT NUMBER: PREV200900183097

TITLE: Salmonella enterica Serovar Typhimurium Strains with Regulated Delayed Attenuation In Vivo.

AUTHOR(S): Curtiss, Roy III [Reprint Author]; Wanda, Soo-Young; Gunn, Bronwyn M.; Zhang, Xin; Tinge, Steven A.; Ananthnarayan, Vidya; Mo, Hua; Wang, Shifeng; Kong, Wei

CORPORATE SOURCE: Arizona State Univ, Biodesign Inst, Ctr Infect Dis and Vaccinol, POB 857401, Tempe, AZ 85287 USA
rcurtiss@asu.edu

SOURCE: Infection and Immunity, (MAR 2009) Vol. 77, No. 3, pp. 1071-1082.
CODEN: INFIBR. ISSN: 0019-9567.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 11 Mar 2009
Last Updated on STN: 11 Mar 2009

ABSTRACT:Recombinant bacterial vaccines must be fully attenuated for animal or human hosts to avoid inducing disease symptoms while exhibiting a high degree of immunogenicity. Unfortunately, many well-studied means for attenuating ***Salmonella*** render strains more susceptible to host defense stresses encountered following oral vaccination than wild-type virulent strains and/or impair their ability to effectively colonize the gut-associated and internal lymphoid tissues. This thus impairs the ability of recombinant vaccines to serve as factories to produce recombinant antigens to induce the desired protective immunity. To address these problems, we designed strains that display features of wild-type virulent strains of Salmonella at the time of immunization to enable strains first to effectively colonize lymphoid tissues and then to exhibit a regulated delayed attenuation in vivo to preclude inducing disease symptoms. We recently described one means to achieve this based on a reversible smooth-rough synthesis of lipopolysaccharide O ***antigen.*** We report here a second means to achieve regulated delayed attenuation in vivo that is based on the substitution of a tightly regulated araC P BAD cassette for the promoters of the fur, crp, phoPQ, and rpoS genes such that expression of these genes is dependent on arabinose provided during growth. Thus, following colonization of lymphoid tissues, the Fur, Crp, PhoPQ, and/or RpoS proteins cease to be synthesized due to the absence of arabinose such that attenuation is gradually manifest in vivo to preclude induction of diseases symptoms. Means for achieving regulated delayed attenuation can be combined with other mutations, which together may yield safe efficacious recombinant attenuated Salmonella vaccines.

CONCEPT CODE:
Genetics - General 03502
Genetics - Animal 03506
Biochemistry studies - Carbohydrates 10068
Pathology - Therapy 12512
Digestive system - Physiology and biochemistry 14004
Blood - Blood and lymph studies 15002
Blood - Blood cell studies 15004
Pharmacology - General 22002
Pharmacology - Immunological processes and allergy 22018
Physiology and biochemistry of bacteria 31000
Genetics of bacteria and viruses 31500
Immunology - General and methods 34502
Medical and clinical microbiology - Bacteriology 36002

INDEX TERMS: Major Concepts
Pharmacology; Infection; Immune System (Chemical Coordination and Homeostasis); Molecular Genetics (Biochemistry and Molecular Biophysics)

INDEX TERMS: Parts, Structures, & Systems of Organisms
gut: digestive system; lymphoid tissue: blood and lymphatics

INDEX TERMS: Diseases
Salmonella enterica infection: bacterial disease, prevention and control

INDEX TERMS: Chemicals & Biochemicals
recombinant antigen; arabinose; Fur protein; RpoS protein; lipopolysaccharide O antigen ; recombinant bacterial vaccine: immunologic-drug, immunostimulant-drug, pharmacodynamics, vaccine; Crp protein; PhoPQ protein

INDEX TERMS: Methods & Equipment
immunization: therapeutic and prophylactic techniques, clinical techniques; oral vaccination: therapeutic and prophylactic techniques, clinical techniques
INDEX TERMS: Miscellaneous Descriptors
protective immunity; colonization; immunogenicity; delayed attenuation; host defense stress
ORGANISM: Classifier
Enterobacteriaceae 06702
Super Taxa
Facultatively Anaerobic Gram-Negative Rods; Eubacteria; Bacteria; Microorganisms
Organism Name
Salmonella enterica (species): pathogen, 23 strains, serovar-Typhimurium
Taxa Notes
Bacteria, Eubacteria, Microorganisms
ORGANISM: Classifier
Muridae 86375
Super Taxa
Rodentia; Mammalia; Vertebrata; Chordata; Animalia
Organism Name
mouse (common): immature, host, strain-BALB/c, strain-C57BL/6, female
Taxa Notes
Animals, Chordates, Mammals, Nonhuman Vertebrates, Nonhuman Mammals, Rodents, Vertebrates
REGISTRY NUMBER: 147-81-9 (arabinose)
GENE NAME: Salmonella enterica fur gene (Enterobacteriaceae): expression; Salmonella enterica rpoS gene (Enterobacteriaceae): expression; Salmonella enterica crp gene (Enterobacteriaceae): expression; Salmonella enterica phoPQ gene (Enterobacteriaceae): expression

L133 ANSWER 18 OF 27 BIOSIS COPYRIGHT (c) 2010 The Thomson Corporation on STN DUPLICATE 5
ACCESSION NUMBER: 2007:242492 BIOSIS Full-text
DOCUMENT NUMBER: PREV200700237077
TITLE: Role of RpoS in fine-tuning the synthesis of Vi capsular polysaccharide in Salmonella enterica serotype Typhi.
AUTHOR(S): Santander, Javier; Wanda, Soo-Young; Nickerson, Cheryl A.; Curtiss, Roy III [Reprint Author]
CORPORATE SOURCE: Arizona State Univ, Biodesign Inst, Ctr Infect Dis and Vaccinol, POB 875401,1001 S McAllister Ave, Tempe, AZ 85287 USA
rcurtiss@asu.edu
SOURCE: Infection and Immunity, (MAR 2007) Vol. 75, No. 3, pp. 1382-1392.
CODEN: INFIBR. ISSN: 0019-9567.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 11 Apr 2007
Last Updated on STN: 11 Apr 2007
ABSTRACT:Regulation of the synthesis of Vi polysaccharide, a major virulence determinant in Salmonella enterica serotype Typhi, is under the control of two regulatory systems, ompR-envZ and rscB-rscC, which respond to changes in osmolarity. Some serotype Typhi strains exhibit overexpression of Vi polysaccharide, which masks clinical detection of lipopolysaccharide 0

antigen. This variation in Vi polysaccharide and O antigen display (VW variation) has been observed since the initial studies of serotype Typhi. In this study, we report that rpoS plays a role in this increased expression in Vi polysaccharide. We constructed a variety of isogenic serotype Typhi mutants that differed in their expression levels of RpoS and examined the role of the rpoS product in synthesis of Vi polysaccharide under different osmolarity conditions. Vi polysaccharide synthesis was also examined in serotype Typhi mutants in which the native promoter of the rpoS was replaced by an ***araCP*** (BAD) cassette, so that the expression of rpoS was arabinose dependent. The RpoS(-) strains showed increased syntheses of Vi polysaccharide, which at low and medium osmolarities masked O antigen detection. In contrast, RpoS(+) strains showed lower syntheses of Vi polysaccharide, and an increased detection of O antigen was observed. During exponential growth, when rpoS is unstable or present at low levels, serotype Typhi RpoS(+) strains overexpress the Vi polysaccharide at levels comparable to those for RpoS- strains. Our results show that RpoS is another regulator of Vi polysaccharide synthesis and contributes to VW variation in serotype Typhi, which has implications for the development of recombinant attenuated ***Salmonella*** vaccines in humans.

CONCEPT CODE: Genetics - General 03502
Biochemistry studies - Carbohydrates 10068
Physiology and biochemistry of bacteria 31000
Genetics of bacteria and viruses 31500

INDEX TERMS: Major Concepts
Molecular Genetics (Biochemistry and Molecular Biophysics)

INDEX TERMS: Chemicals & Biochemicals
arabinose; RpoS; O antigen; Vi capsular polysaccharide: synthesis

ORGANISM: Classifier
Enterobacteriaceae 06702
Super Taxa
Facultatively Anaerobic Gram-Negative Rods; Eubacteria; Bacteria; Microorganisms
Organism Name
Salmonella enterica (species): serotype typhi
Taxa Notes
Bacteria, Eubacteria, Microorganisms

REGISTRY NUMBER: 147-81-9 (arabinose)

GENE NAME: Salmonella enterica rpoS gene (Enterobacteriaceae): mutation, expression; Salmonella enterica araCP-BAD gene (Enterobacteriaceae): mutation, expression

L133 ANSWER 19 OF 27 BIOSIS COPYRIGHT (c) 2010 The Thomson Corporation on STN

ACCESSION NUMBER: 2002:176652 BIOSIS Full-text

DOCUMENT NUMBER: PREV200200176652

TITLE: Cloning and characterization of an iron regulated locus, iroA, in Salmonella choleraesuis.

AUTHOR(S): Chang, C. F. [Reprint author]; Wu, W. S. [Reprint author]; Hseih, P. C. [Reprint author]; Chang, Y. F. [Reprint author]

CORPORATE SOURCE: National Taiwan University, Taipei, Taiwan

SOURCE: Abstracts of the General Meeting of the American Society for Microbiology, (2001) Vol. 101, pp. 125. print.
Meeting Info.: 101st General Meeting of the American Society for Microbiology. Orlando, FL, USA. May 20-24, 2001. American Society for Microbiology.
ISSN: 1060-2011.

DOCUMENT TYPE: Conference; (Meeting)
Conference; Abstract; (Meeting Abstract)
LANGUAGE: English
ENTRY DATE: Entered STN: 6 Mar 2002
Last Updated on STN: 6 Mar 2002
ABSTRACT:The ability of Salmonella choleraesuis to acquire iron in an iron-restricted environment from the host has been shown to correlate with virulence. This bacterium has evolved a high-affinity iron acquisition system and many iron transport genes are regulated by iron. In many bacteria, transcriptional regulation by iron depends on the ferric ***uptake*** regulator, the fur gene. In order to identify the Fur regulated-iron acquisition genes of S. choleraesuis, we have used the Fur titration assay (FURTA) to screen the Fur regulated promoters regions and then, to compare with Escherichia coli Fur box consensus sequence. The DNA sequence of a positive FURTA clone (pSC4) shows homologous to iroB gene in the iroA locus of S. typhimurium. DNA probe derived from this clone has been used to screen a lamda-dash library of S. choleraesuis. The iroA locus of S. choleraesuis has been cloned and sequenced. The DNA sequence results revealed that the iroA locus consists of iroB, C, D, E, and N genes. The DNA sequence of the iroN gene showed homologous to several TonB-dependent ***outer*** membrane siderophore receptors and putative virulence gene among the extraintestinal pathogenic E. coli. Further characterization of the in vivo expression of IroN polypeptides and the pathogenicity of its knockout mutant in an animal model is in progress.
CONCEPT CODE: General biology - Symposia, transactions and proceedings 00520
Genetics - General 03502
Biochemistry studies - Minerals 10069
Physiology and biochemistry of bacteria 31000
Genetics of bacteria and viruses 31500
INDEX TERMS: Major Concepts
Molecular Genetics (Biochemistry and Molecular Biophysics)
INDEX TERMS: Chemicals & Biochemicals
IroN polypeptides: expression; iron
INDEX TERMS: Methods & Equipment
Fur titration assay: detection method; cloning: molecular genetic method
INDEX TERMS: Miscellaneous Descriptors
iron-restricted environment; transcriptional regulation; virulence; Meeting Abstract
REGISTRY NUMBER: 7439-89-6 (iron)
GENE NAME: Salmonella chloeraesuis iroA gene (Enterobacteriaceae); Salmonella choleraesuis fur gene [Salmoneila choleraesuis ferric uptake regulator gene] (Enterobacteriaceae)

L133 ANSWER 20 OF 27 BIOTECHDS COPYRIGHT 2010 THOMSON REUTERS on STN
ACCESSION NUMBER: 1991-09175 BIOTECHDS Full-text
TITLE: Vaccine protecting against Gram-negative bacterium; comprises attenuated Salmonella typhimurium with deletion in e.g. adenylate-cyclase, cyclic AMP receptor gene
PATENT ASSIGNEE: Washington-Univ.
PATENT INFO: WO 9106317 16 May 1991
APPLICATION INFO: WO 1990-US6503 2 Nov 1990
PRIORITY INFO: US 1989-431597 3 Nov 1989
DOCUMENT TYPE: Patent
LANGUAGE: English

OTHER SOURCE: WPI: 1991-163958 [22]
ABSTRACT: A vaccine for protection against Gram-negative bacteria contains a live, avirulent Salmonella able to induce immunity to homologous and heterologous Salmonella serotypes and other Gram-negative enteric bacteria. The Salmonella has at least 1 mutation in a gene which globally regulates other genes, and a second mutation in a gene encoding an enzyme involved in lipopolysaccharide synthesis, which results in a reversible rough phenotype. The second mutation may be in a gene (phoP) which regulates synthesis of iron-regulated outer membrane proteins (OMP) and results in constitutive expression of OMP. The isolated avirulent strains of Salmonella typhimurium carrying the specified mutations are claimed, and are selected from Chi3761, Chi3985, Chi4126, Chi4137 and Chi4152. The preferred organisms have mutations, especially deletions, in the adenylate-cyclase (EC-4.6.1.1) gene (cya) and in the cyclic-AMP receptor protein gene (crp) (involved in global regulation). The second mutation is in the galE (UDP-galactose-epimerase) or pmi (mannosephosphate-isomerase, EC-5.3.1.8) genes to impart the reversibly rough phenotype, or is in the fur gene. (67pp)
CLASSIFICATION: D PHARMACEUTICALS; D4 Vaccines; A MICROBIOLOGY; A1 Genetics
CONTROLLED TERMS: AVIRULENT SALMONELLA TYPHIMURIUM APPL. VACCINE PREP., ATTENUATION BY DELETION IN ADENYLATE-CYCLASE, CYCLIC-AMP RECEPTOR, UDP-GALACTOSE-EPIMERASE, MANNOSEPHOSPHATE-ISOMERASE GENE BACTERIUM ENZYME EC-4.6.1.1 EC-5.3.1.8

L133 ANSWER 21 OF 27 SCISEARCH COPYRIGHT (c) 2010 The Thomson Corporation on STN DUPLICATE 8
ACCESSION NUMBER: 1992:403572 SCISEARCH Full-text
THE GENUINE ARTICLE: JB456
TITLE: EFFECT OF SALMONELLA-TYPHIMURIUM FERRIC UPTAKE REGULATOR (FUR) MUTATIONS ON IRON-REGULATED AND PH-REGULATED PROTEIN-SYNTHESIS
AUTHOR: FOSTER J W (Reprint)
CORPORATE SOURCE: UNIV SO ALABAMA, COLL MED, DEPT MICROBIOL & IMMUNOL, MOBILE, AL 36688 (Reprint)
AUTHOR: HALL H K
COUNTRY OF AUTHOR: USA
SOURCE: JOURNAL OF BACTERIOLOGY, (JUL 1992) Vol. 174, No. 13, pp. 4317-4323.
ISSN: 0021-9193.
PUBLISHER: AMER SOC MICROBIOLOGY, 1325 MASSACHUSETTS AVENUE, NW, WASHINGTON, DC 20005-4171.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 41
ENTRY DATE: Entered STN: 1994
Last Updated on STN: 1994
ABSTRACT:
Fur is an important regulatory protein known to function in the presence of iron as a repressor of iron-controlled genes. It was recently discovered that Fur is also essential to Salmonella typhimurium for mounting an adaptive acid tolerance response (J. W. Foster, J. Bacteriol 173:6896-6902, 1991). Because little is known about the effect of Fur on the physiology of this enteric pathogen, a systematic two-dimensional polyacrylamide gel electrophoresis (PAGE) analysis was conducted to identify proteins whose synthesis is linked to iron levels. Mutations in the

fur locus were identified and used to classify which proteins are controlled by Fur. Thirty-six proteins were overtly affected by iron availability, most of which were clearly under the control of Fur. Although most of the Fur-dependent proteins were under negative control, a significant portion (15 of 34) appeared to be under a form of positive control. Nine of the positively controlled proteins required Fur and iron for expression. However, Fur lacking iron was also required for the induction of six gene products. Surprisingly, not all iron-regulated proteins were controlled by Fur and not all Fur-dependent proteins were obviously regulated by iron status. Because fur mutants fail to mount an effective acid tolerance response, we made a comparative two-dimensional PAGE analysis of 100 total acid- and iron-regulated gene products. Production of most of these proteins was regulated by only one of the two stresses, yet a clear subset of seven genes were influenced by both acid and iron and were also controlled by fur. These proteins were also members of the acid tolerance response modulon. Consistent with the fur effect on pH-regulated protein synthesis, fur mutants lacked the inducible pH homeostasis system associated with the acid tolerance response. The results provide further evidence that Fur has an extensive impact on gene expression and cellular physiology and suggest an explanation for the acid-sensitive nature of fur mutants.

CATEGORY: MICROBIOLOGY

SUPPL. TERM PLUS: CAMP RECEPTOR PROTEIN; ESCHERICHIA-COLI; GENE-EXPRESSION; OUTER-MEMBRANE; TRANSPORT; REPRESSOR; OPERON; VIRULENCE; OPERATOR; SYSTEMS

REFERENCE(S):

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	ARN PG (RPG)	Referenced Work (RWK)
AIBA, H	1983	32	141	CELL
AIBA, H	1985	4	3329	EMBO J
AIBA, H	1985	260	3063	J BIOL CHEM
ALIABADI, Z	1988	170	842	J BACTERIOL
BAGG, A	1987	26	5471	BIOCHEMISTRY-US
BAGG, A	1987	51	509	MICROBIOL REV
BENJAMIN, W H	1985	50	392	INFECT IMMUN
BENNETT, R L	1976	127	498	J BACTERIOL
BOOTH, I R	1979	182	687	BIOCHEM J
BOYD, J	1990	87	5968	P NATL ACAD SCI USA
CALDERWOOD, S B	1987	169	4759	J BACTERIOL
CHUMLEY, F G	1979	91	639	GENETICS
CROSA, J H	1989	53	517	MICROBIOL REV
DAVIS, R W	1980			ADV BACTERIAL GENETI
DELORENZO, V	1987	169	2624	J BACTERIOL
DUBOS, R J	1946	84	143	J EXP MED
ERNST, J F	1978	135	928	J BACTERIOL
FINLAY, B B	1989	53	210	MICROBIOL REV
FOSTER, J W	1990	172	771	J BACTERIOL
FOSTER, J W	1991	173	5129	J BACTERIOL
FOSTER, J W	1991	173	6896	J BACTERIOL
FOSTER, J W				UNPUB
GARGES, S	1988	170	1417	J BACTERIOL
GOLDBERG, M B	1991	88	1125	P NATL ACAD SCI USA
HANTKE, K	1987	210	135	MOL GEN GENET
HENNECKE, H	1990	4	1621	MOL MICROBIOL
HOLLEY, E A	1982	152	959	J BACTERIOL
MALLICK, U	1979	76	5520	P NATL ACAD SCI USA
MILLER, J H	1972			EXPT MOL GENETICS
NEIDERHOFFER, E C	1990	172	1930	J BACTERIOL
NEILANDS, J B	1982	36	285	ANNU REV MICROBIOL
NEILANDS, J B	1972	11	145	STRUCT BONDING BERLI

PAYNE, S M	1988	16	81	CRC CRIT R MICROBIOL
SANDERSON, K E	1988	52	485	MICROBIOL REV
SPECTOR, M				COMMUNICATION
SPECTOR, M P	1986	168	420	J BACTERIOL
SPECTOR, M P	1988	170	345	J BACTERIOL
STAGGS, T M	1991	173	417	J BACTERIOL
STOEBNER, J A	1988	56	2891	INFECT IMMUN
VOGEL, H J	1956	218	97	J BIOL CHEM
WANNER, B L	1986	191	39	J MOL BIOL

L133 ANSWER 22 OF 27 SCISEARCH COPYRIGHT (c) 2010 The Thomson Corporation on STN

ACCESSION NUMBER: 1998:776862 SCISEARCH Full-text
THE GENUINE ARTICLE: 127JD
TITLE: Iron-responsive gene regulation in a Campylobacter jejuni fur mutant
AUTHOR: Ketley J M (Reprint)
CORPORATE SOURCE: Univ Leicester, Dept Genet, Univ Rd, Leicester LE1 7RH, Leics, England (Reprint)
AUTHOR: van Vliet A H M; Wooldridge K G
CORPORATE SOURCE: Univ Leicester, Dept Genet, Leicester LE1 7RH, Leics, England
COUNTRY OF AUTHOR: England
SOURCE: JOURNAL OF BACTERIOLOGY, (OCT 1998) Vol. 180, No. 20, pp. 5291-5298.
ISSN: 0021-9193.
PUBLISHER: AMER SOC MICROBIOLOGY, 1752 N ST NW, WASHINGTON, DC 20036-2904 USA.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 64
ENTRY DATE: Entered STN: 1998
Last Updated on STN: 1998

ABSTRACT:

The expression of iron-regulated systems in gram-negative bacteria is generally controlled by the Fur protein, which represses the transcription of iron-regulated promoters by using Fe2+ as a cofactor. Mutational analysis of the Campylobacter jejuni fur gene was carried out by generation of a set of mutant copies of fur which had a kanamycin or chloramphenicol resistance gene introduced into the regions encoding the N and C termini of the Fur protein. The mutated genes mere recombined into the C. jejuni NCTC 11168 chromosome, and putative ***mutants*** were confirmed by Southern hybridization. C. jejuni ***mutants*** were obtained only when the resistance genes were transcribed in the same orientation as the fur gene. The C. jejuni fur mutant grew slower than the parental strain. Comparison of protein profiles of fractionated C. jejuni cells grown in low- or high-iron medium indicated derepressed expression of three iron-regulated outer ***membrane*** proteins with molecular masses of 70, 75, and 80 kDa. Characterization by N-terminal amino acid sequencing showed the 75-kDa protein to be identical to CfrA, a Campylobacter coil siderophore receptor homologue, whereas the 70 kDa protein was identified as a new siderophore receptor homologue, Periplasmic fractions contained four derepressed proteins with molecular masses of 19, 29, 32, and 36 kDa, The 19-kDa protein has been previously identified, but its function is unknown. The cytoplasmic fraction contained two iron-repressed and two iron-induced proteins with molecular masses of 26, 55, 31, and 40 kDa, respectively. The two iron-repressed proteins have been previously identified as the oxidative stress defense proteins catalase (KatA) and alkyl hydroperoxide reductase (AhpC), AhpC and KatA were still iron regulated in the fur mutant, suggesting the

presence of Fur-independent iron regulation. Further analysis of the C, jejuni iron and Fur regulons by using two-dimensional gel electrophoresis demonstrated the total number of iron- and Fur-regulated proteins to be loner than for other bacterial pathogens.

CATEGORY: MICROBIOLOGY

SUPPL. TERM PLUS: FERRIC UPTAKE REGULATOR; OUTER-MEMBRANE PROTEIN; ESCHERICHIA-COLI; SALMONELLA-TYPHIMURIUM; PSEUDOMONAS-AERUGINOSA; MOLECULAR CHARACTERIZATION; NEISSERIA-MENINGITIDIS; SUPEROXIDE-DISMUTASE; NUCLEOTIDE-SEQUENCE; FUNCTIONAL DOMAINS

REFERENCE(S):

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	ARN PG (RPG)	Referenced Work (RWK)
AUSUBEL F M	1992			SHORT PROTOCOLS MOL
BAILLON M L A				UNPUB CHARACTERISATI
BERISH S A	1993	61	4599	INFECT IMMUN
BLASER M J	1983	5	157	EPIDEMIOL REV
BOURKE B B	1996	183	219	GENE
BSAT N	1998	29	189	MOL MICROBIOL
BULLEN J J	1981	3	1127	REV INFECT DIS
CHAN V L	1995	164	25	GENE
CHAN V L	1992	174	695	J BACTERIOL
CHAN V L	1991	101	51	GENE
CHATTERJEE S	1998			UNPUB
CHRISTMAN M F	1989	86	3484	P NATL ACAD SCI USA
COY M	1991	30	8201	BIOCHEMISTRY-US
DUBBELS B				COMMUNICATION
ERNST J F	1978	135	928	J BACTERIOL
FARR S B	1991	55	561	MICROBIOL REV
FIELD L H	1986	54	126	INFECT IMMUN
FOSTER J W	1992	174	4317	J BACTERIOL
GRANT K A	1995	141	1369	MICROBIOL-UK
GUERRY P	1997	179	3997	J BACTERIOL
HANTKE K	1984	197	337	MOL GEN GENET
HANTKE K	1987	210	135	MOL GEN GENET
HASSETT D J	1996	178	3996	J BACTERIOL
JANVIER B				IN PRESS RES MICROBI
KARKHOFFSCHWEIZ.RR	1994	141	139	GENE
KARLYSHEV A V	1998	144	503	MICROBIOL-UK 2
KETLEY J M	1997	143	5	MICROBIOL-UK 1
LITWIN C M	1992	174	1897	J BACTERIOL
LITWIN C M	1994	176	240	J BACTERIOL
LITWIN C M	1993	175	706	J BACTERIOL
LITWIN C M	1993	6	137	CLIN MICROBIOL REV
MILLER J F	1988	85	856	P NATL ACAD SCI USA
MISHU B	1993	17	104	CLIN INFECT DIS
MONGKOLSUK S	1997	179	3950	J BACTERIOL
OCHSNER U A	1996	93	4409	P NATL ACAD SCI USA
PARK S F	1995	177	2259	J BACTERIOL
PARK S F				COMMUNICATION
PICKETT C L	1992	60	3872	INFECT IMMUN
PRINCE R W	1993	175	2589	J BACTERIOL
RICHARDSON P T	1995	141	3181	MICROBIOL-UK 12
RIDOUT C J	1995	365	152	FEBS LETT
SAMBROOK J	1989			MOL CLONING LAB MANU
SCHAFFER S	1985	200	110	MOL GEN GENET
STAGGS T M	1991	173	417	J BACTERIOL
STAGGS T M	1994	176	7614	J BACTERIOL

STOJILJKOVIC I	1995	247	199	MOL GEN GENET
STOJILJKOVIC I	1994	236	531	J MOL BIOL
TAUXE R V	1992		9	CAMPYLOBACTER JEJUNI
THOMAS C E	1994	11	725	MOL MICROBIOL
THOMAS C E	1996	178	4224	J BACTERIOL
TOLMASKY M E	1994	176	213	J BACTERIOL
TOMB J F	1997	388	539	NATURE
TOUATI D	1995	177	2305	J BACTERIOL
TSOLIS R M	1995	177	4628	J BACTERIOL
VANVLIET A H M				UNPUB
VANVLIET A H M	1998	27	405	METHOD MICROBIOL
VENTURI V	1995	17	603	MOL MICROBIOL
VENTURI V	1995	15	1081	MOL MICROBIOL
WASSENAAR T M	1993	132	131	GENE
WERTHEIMER A M	1994	176	5116	J BACTERIOL
WOOLDRIDGE K G	1993	12	325	FEMS MICROBIOL REV
WOOLDRIDGE K G	1994	176	5852	J BACTERIOL
WREN B W	1994	16	994	BIOTECHNIQUES
YAO R J	1993	130	127	GENE

L133 ANSWER 23 OF 27 SCISEARCH COPYRIGHT (c) 2010 The Thomson Corporation on STN

ACCESSION NUMBER: 1996:522154 SCISEARCH Full-text
THE GENUINE ARTICLE: UW795
TITLE: Isolation and analysis of a fur mutant of Neisseria gonorrhoeae
AUTHOR: Thomas C E (Reprint); Sparling P F
CORPORATE SOURCE: UNIV N CAROLINA, SCH MED, DEPT MICROBIOL & IMMUNOL, CHAPEL HILL, NC 27599; UNIV N CAROLINA, SCH MED, DEPT MED, CHAPEL HILL, NC 27599
COUNTRY OF AUTHOR: USA
SOURCE: JOURNAL OF BACTERIOLOGY, (JUL 1996) Vol. 178, No. 14, pp. 4224-4232.
ISSN: 0021-9193.
PUBLISHER: AMER SOC MICROBIOLOGY, 1752 N ST NW, WASHINGTON, DC 20036-2904 USA.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 77
ENTRY DATE: Entered STN: 1996
Last Updated on STN: 1996

ABSTRACT:
The pathogenic Neisseria spp. produce a number of iron-regulated gene products that are thought to be important in virulence. Iron-responsive regulation of these gene products has been attributed to the presence in Neisseria spp. of the Fur (ferric uptake regulation) protein. Evidence for the role of Fur in neisserial iron regulation has been indirect because of the inability to make fur null mutations. To circumvent this problem, we used manganese selection to isolate missense ***mutations*** of Neisseria gonorrhoeae fur. We show that a ***mutation*** in gonococcal fur resulted in reduced modulation of expression of four well-stained iron-repressed genes and affected the iron regulation of a broad range of other genes as judged by two-dimensional polyacrylamide gel electrophoresis (PAGE). All 15 of the iron-repressed spots observed by two-dimensional PAGE were at least partially derepressed in the fur ***mutant*** , and 17 of the 45 iron-induced spots were affected by the fur ***mutation.*** Thus, Fur plays a central role in regulation of iron-repressed gonococcal genes and appears to be involved in regulation of many iron-induced genes. The size and complexity of the iron regulons in N. gonorrhoeae are much greater than previously recognized.

CATEGORY: MICROBIOLOGY
SUPPL. TERM PLUS: UPTAKE REGULATION PROTEIN; OUTER-MEMBRANE PROTEIN; VIBRIO-CHOLERAE; DNA FRAGMENT; TRANSFERRIN UTILIZATION; SALMONELLA-TYPHIMURIUM; IRON ASSIMILATION; GENE-EXPRESSION; UPTAKE SYSTEMS; CLONING

REFERENCE(S):

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	ARN PG (RPG)	Referenced Work (RWK)
ACHTMAN M	1988	168	507	J EXP MED
ANDERSON J E	1994	176	3162	J BACTERIOL
BAGG A	1985	161	450	J BACTERIOL
BAGG A	1987	51	509	MICROBIOL REV
BEALL B W	1995	30	223	CURR MICROBIOL
BERISH S A	1993	61	4599	INFECT IMMUN
BEUCHER M	1995	177	2041	J BACTERIOL
BIEGLE S				IN PRESS GENE
BISWAS G D	1995	63	2958	INFECT IMMUN
BISWAS G D	1977	129	983	J BACTERIOL
BISWAS G D	1989	171	657	J BACTERIOL
BLACK J R	1986	54	710	INFECT IMMUN
BLANTON K J	1990	172	5225	J BACTERIOL
BRIAT J F	1992	138	2475	J GEN MICROBIOL
BRICKMAN T J	1995	177	268	J BACTERIOL
BULLEN J J	1978	80	1	CURR TOP MICROBIOL I
CAMPBELL L A	1979	140	1109	J BACTERIOL
CARBONETTI N	1990	4	1009	MOL MICROBIOL
CATLIN B W	1973	128	178	J INFECT DIS
CHANG A C Y	1978	134	1141	J BACTERIOL
CHEN C Y	1993	10	311	MOL MICROBIOL
CORNELISSEN C N	1992	174	5788	J BACTERIOL
COY M	1991	30	8201	BIOCHEMISTRY-US
ELKINS C	1991	173	391	J BACTERIOL
ELKINS C	1992	6	2617	MOL MICROBIOL
ERNST J F	1978	135	928	J BACTERIOL
FLITTER W	1983	158	310	FEBS LETT
FOSTER J W	1992	174	4317	J BACTERIOL
GOODMAN S D	1991	173	5921	J BACTERIOL
HANTKE K	1981	182	288	MOL GEN GENET
HANTKE K	1987	210	135	MOL GEN GENET
HASSETT D J	1990	172	7293	J BACTERIOL
HEINE R P	1996	174	659	AM J OBSTET GYNECOL
HENNECKE H	1990	4	1621	MOL MICROBIOL
HICKEY E K	1994	143	117	GENE
KELLOGG D S	1963	85	1274	J BACTERIOL
KREUZER K	1975	81	459	GENETICS
LAEMMLI U K	1970	227	680	NATURE
LAM M S	1994	176	5108	J BACTERIOL
LITWIN C M	1993	6	137	CLIN MICROBIOL REV
LITWIN C M	1992	174	1897	J BACTERIOL
LITWIN C M	1993	175	706	J BACTERIOL
LITWIN C M	1994	176	240	J BACTERIOL
MICKELSEN P A	1981	33	555	INFECT IMMUN
MIETZNER T A	1986	51	60	INFECT IMMUN
MILDVAN A S	1979	6	219	CRC CRIT R BIOCHEM
MILLER J H	1972			EXPT MOL GENETICS
MORSE S A	1990		458	NEISSERIAE 1990
NEILANDS J B	1981	50	715	ANN REV BIOCH
NORQVIST A	1978	4	281	FEMS MICROBIOL LETT

OFARRELL P H	1975	250	4007	J BIOL CHEM
PRENTKI P	1984	29	303	GENE
PRINCE R W	1993	175	2589	J BACTERIOL
SAITO T	1991	197	39	EUR J BIOCHEM
SAITO T	1991	197	43	EUR J BIOCHEM
SAMBROOK J	1989			MOL CLONING LAB MANU
SARUBBI F A	1974	120	1284	J BACTERIOL
SCHAFFER S	1985	200	110	MOL GEN GENET
SCHMITT M P	1988	170	5579	J BACTERIOL
STAGGS T M	1991	173	417	J BACTERIOL
STAGGS T M	1994	176	7614	J BACTERIOL
STAGGS T M	1992	6	2507	MOL MICROBIOL
STERN A	1984	37	447	CELL
STOJILJKOVIC I	1995	15	531	MOL MICROBIOL
THOMAS C E	1994	11	725	MOL MICROBIOL
TOLMASKY M E	1994	176	213	J BACTERIOL
TOUATI D	1995	177	2305	J BACTERIOL
TOWBIN H	1979	76	4350	P NATL ACAD SCI USA
TREES D				UNPUB
VENTURI V	1995	15	1081	MOL MICROBIOL
WEE S	1988	1	62	BIOL METALS
WEI Y				UNPUB KLEBSIELLA PNE
WEINBERG E D	1984	64	65	PHYSIOL REV
WERTHEIMER A M	1994	176	5116	J BACTERIOL
WEST S E H	1985	47	388	INFECT IMMUN
WEST S E H	1987	169	3414	J BACTERIOL
WOOLDRIDGE K G	1994	176	5852	J BACTERIOL

L133 ANSWER 24 OF 27 SCISEARCH COPYRIGHT (c) 2010 The Thomson Corporation on STN

ACCESSION NUMBER: 1993:675386 SCISEARCH Full-text
THE GENUINE ARTICLE: ME617
TITLE: IDENTIFICATION AND CLONING OF A FUR HOMOLOG FROM NEISSERIA-GONORRHOEAE
AUTHOR: BERISH S A (Reprint); SUBBARAO S; CHEN C Y; TREES D L; MORSE S A
CORPORATE SOURCE: CTR DIS CONTROL & PREVENT, NATL CTR INFECT DIS, DIV SEXUALLY TRANSMITTED DIS, RES LAB, ATLANTA, GA 30333
COUNTRY OF AUTHOR: USA
SOURCE: INFECTION AND IMMUNITY, (NOV 1993) Vol. 61, No. 11, pp. 4599-4606.
ISSN: 0019-9567.
PUBLISHER: AMER SOC MICROBIOLOGY, 1752 N ST NW, WASHINGTON, DC 20036-2904 USA.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 51
ENTRY DATE: Entered STN: 1994
Last Updated on STN: 1994

ABSTRACT:
The promoter region of the major iron-regulated protein of Neisseria gonorrhoeae, Fbp, has two regions that exhibit homology with the Escherichia coli consensus Fur-binding sequences. Gel retardation assays suggested that purified E. coli Fur bound to two sites within the Fbp promoter. The presence of a gonococcal Fur homolog was suggested by Southern hybridization under conditions of low stringency, which revealed a DNA locus that exhibited homology to the E. coli fur gene. Oligonucleotides derived from the conserved regions of fur genes of extremely diverse bacteria were used to amplify a 140-bp fragment of a putative gonococcal fur gene. This fragment was used to identify

clones containing the entire gonococcal fur gene. After sequencing the gonococcal fur gene and its promoter region, we found that gonococcal Fur exhibited 50% identity with E. coli Fur at the amino acid level; however, it complemented two E. coli Fur- mutants. The presence of a Fur homolog in N. gonorrhoeae suggests that Fur-regulated genes are widely distributed among extremely diverse bacteria.

CATEGORY: IMMUNOLOGY; INFECTIOUS DISEASES

SUPPL. TERM PLUS: IRON-REGULATED PROTEIN; OUTER-MEMBRANE PROTEIN; ESCHERICHIA-COLI; SALMONELLA -TYPHIMURIUM; MOLECULAR-CLONING; STRUCTURAL GENE; TRANSFERRIN; DNA; LACTOFERRIN; EXPRESSION

REFERENCE(S):

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	ARN PG (RPG)	Referenced Work (RWK)
AUSUBEL, F M	1987	2		CURRENT PROTOCOLS MO
BAGG, A	1987	51	509	MICROBIOL REV
BERISH, S A	1990	171	1535	J EXP MED
BIRNBOIM, H C	1979	7	1513	NUCLEIC ACIDS RES
BULLEN, J J	1978	80	1	CURR TOP MICROBIOL I
CARBONETTI, N H	1987	84	9084	P NATL ACAD SCI USA
CHEN, J C R	1991	5	1531	MOL MICROBIOL
CORNELISSEN, C N	1992	174	5788	J BACTERIOL
COULTON, J W	1986	165	181	J BACTERIOL
COY, M	1991	30	8201	BIOCHEMISTRY-US
DELCARDAYRE, S	1991		387	IRON BIOMINERALS
DELORENZO, V	1988	173	537	EUR J BIOCHEM
DELORENZO, V	1987	169	2624	J BACTERIOL
DELORENZO, V	1988	203	875	J MOL BIOL
ERNST, J F	1978	135	928	J BACTERIOL
FOSTER, J W	1992	174	4317	J BACTERIOL
GRUNSTEIN, M	1975	72	3961	P NATL ACAD SCI USA
HANTKE, K				COMMUNICATION
HANTKE, K	1984	197	337	MOL GEN GENET
HANTKE, K	1987	210	135	MOL GEN GENET
HENNECKE, H	1990	4	1621	MOL MICROBIOL
LAEMMLI, U K	1970	227	680	NATURE
LITWIN, C M	1992	174	1897	J BACTERIOL
LITWIN, C M	1993	175	706	J BACTERIOL
MANIATIS, T	1982			MOL CLONING
MARMUR, J	1961	3	208	J MOL BIOL
MCKENNA, W R	1988	56	785	INFECT IMMUN
MICKELSEN, P A	1981	33	555	INFECT IMMUN
MICKELSEN, P A	1982	35	915	INFECT IMMUN
MIETZNER, T A	1984	45	410	INFECT IMMUN
MIETZNER, T A	1986	51	60	INFECT IMMUN
MILLER, J H	1972			EXPT MOL GENETICS
MORNA, C P	1990		267	MOL BIOL METHODS BAC
MORSE, S A	1989		639	INFECT DIS
MORSE, S A	1991		453	NEISSERIAE 1990
MORSE, S A	1988	10	S306	REV INFECT DIS S2
PRENTKI, P	1984	29	303	GENE
RPINCE, R W	1993	175	2589	J BACTERIOL
SCHAFFER, S	1985	200	110	MOL GEN GENET
SCHRYVERS, A B	1989	35	409	CAN J MICROBIOL
SHYAMALA, V	1989	84	1	GENE
SOUTHERN, E M	1975	98	503	J MOL BIOL
STAGGS, T M	1991	173	417	J BACTERIOL
STAGGS, T M	1992	6	2507	MOL MICROBIOL
THOMAS, C				COMMUNICATION

THOMPSON, S A	1993	175	811	J BACTERIOL
TSAI, W M	1989	57	2653	INFECT IMMUN
WEINBERG, E D	1978	42	45	MICROBIOL REV
WEST, S E H	1989	2	S92	CLIN MICCROBIOL RE S
WINSHIP, P R	1989	17	1266	NUCLEIC ACIDS RES
YANCEY, R J	1981	32	592	INFECT IMMUN

L133 ANSWER 25 OF 27 SCISEARCH COPYRIGHT (c) 2010 The Thomson Corporation on STN

ACCESSION NUMBER: 1993:76561 SCISEARCH Full-text
THE GENUINE ARTICLE: KJ722
TITLE: CLONING AND GENETIC-ANALYSIS OF THE VIBRIO-VULNIFICUS-FUR GENE AND CONSTRUCTION OF A FUR MUTANT BY INVIVO MARKER EXCHANGE
AUTHOR: LITWIN C M (Reprint)
CORPORATE SOURCE: MASSACHUSETTS GEN HOSP, INFECT DIS UNIT, BOSTON, MA 02114 (Reprint)
AUTHOR: CALDERWOOD S B
CORPORATE SOURCE: HARVARD UNIV, SCH MED, DEPT MICROBIOL & MOLEC GENET, BOSTON, MA 02115
COUNTRY OF AUTHOR: USA
SOURCE: JOURNAL OF BACTERIOLOGY, (FEB 1993) Vol. 175, No. 3, pp. 706-715.
ISSN: 0021-9193.
PUBLISHER: AMER SOC MICROBIOLOGY, 1325 MASSACHUSETTS AVENUE, NW, WASHINGTON, DC 20005-4171.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 65
ENTRY DATE: Entered STN: 1994
Last Updated on STN: 1994

ABSTRACT:
Vibrio vulnificus infections have been associated with iron overload and preexisting liver disease. Iron may play a major role in the pathogenesis of V. vulnificus infections. Many virulence genes, as well as genes involved in the transport of iron by bacteria, are regulated by iron, with increased expression under low-iron conditions. In Escherichia coli and Vibrio cholerae, transcriptional regulation by iron depends on the fur ***gene.*** We utilized Southern hybridization under low- and high-stringency conditions with both E. coli and V. cholerae fur ***gene*** probes to demonstrate that there are fur-homologous sequences in the DNAs of V. vulnificus, Vibrio fischeri, and Aeromonas sp. but not in the DNAs of the other bacterial species tested. We developed a restriction map and cloned the fur-homologous sequence from V. vulnificus. The hybridizing clone of V. vulnificus chromosomal DNA complemented a V. cholerae fur ***mutant.*** DNA sequence analysis confirmed the presence of a 149-amino-acid open reading frame that was 77% homologous to E. coli Fur and 93% homologous to V. cholerae Fur. Primer extension localized a single promoter for the V. vulnificus fur gene. Northern (RNA) blot analysis and beta-galactosidase assays of an operon fusion to lacZ suggested that there was not significant regulation of transcription of V. vulnificus fur by iron or the E. coli Fur protein. We used marker exchange to construct a V. vulnificus fur deletion mutant and confirmed its phenotype by observing overexpression of iron-regulated outer ***membrane*** proteins on sodium dodecyl sulfate-polyacrylamide gel electrophoresis. The fur deletion mutant of V. vulnificus will be helpful in future studies of the role of iron in V. vulnificus pathogenesis.
CATEGORY: MICROBIOLOGY
SUPPL. TERM PLUS: CYTOTOXIN-HEMOLYSIN GENE; IRON UPTAKE SYSTEM;

ESCHERICHIA-COLI; NUCLEOTIDE-SEQUENCE; REGULATORY GENE;
CONSTITUTIVE EXPRESSION; SALMONELLA-TYPHIMURIUM;
ELASTOLYTIC PROTEASE; SUICIDE VECTOR; VIRULENCE

REFERENCE(S):

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	ARN PG (RPG)	Referenced Work (RWK)
ACTIS, L A	1985	161	736	J BACTERIOL
BIRNBOIM, H C	1979	7	1513	NUCLEIC ACIDS RES
BLAKE, P A	1979	300	1	NEW ENGL J MED
BLOMFIELD, I C	1991	5	1447	MOL MICROBIOL
BOYD, J	1990	87	5968	P NATL ACAD SCI USA
BULLEN, J J	1981	3	1127	REV INFECT DIS
CALDERWOOD, S B	1987	169	4759	J BACTERIOL
CALDERWOOD, S B	1988	170	1015	J BACTERIOL
DEGRANDIS, S	1987	169	4313	J BACTERIOL
DELORENZO, V	1988	173	537	EUR J BIOCHEM
DELORENZO, V	1987	169	2624	J BACTERIOL
DONNENBERG, M S	1991	59	4310	INFECT IMMUN
DUNLAP, P V	1992	157	235	ARCH MICROBIOL
DUNLAP, P V	1989	171	1199	J BACTERIOL
DUNLAP, P V	1992	7	203	J BIOLUMIN CHEMILUMI
ERNST, J F	1978	135	928	J BACTERIOL
FARRELL, D H	1990	86	45	GENE
GOLDBERG, M B	1990	58	55	INFECT IMMUN
GOLDBERG, M B	1991	88	1125	P NATL ACAD SCI USA
GRAY, L D	1985	48	62	INFECT IMMUN
GRAY, L D	1987	155	236	J INFECT DIS
HANAHAN, D	1983	166	557	J MOL BIOL
HANTKE, K	1981	182	288	MOL GEN GENET
HAYGOOD, M G	1985	162	209	J BACTERIOL
JOHNSON, D E	1984	150	413	J INFECT DIS
KLONTZ, K C	1988	109	318	ANN INTERN MED
KOTHARY, M H	1985	50	534	INFECT IMMUN
KOTHARY, M H	1987	133	1783	J GEN MICROBIOL
KREGER, A	1981	33	583	INFECT IMMUN
KREGER, A	1981	144	244	J INFECT DIS
KREGER, A S	1984	45	537	INFECT IMMUN
LITWIN, C M				IN PRESS CLIN MICROB
LITWIN, C M	1992	174	1897	J BACTERIOL
MEKALANOS, J J	1983	306	551	NATURE
MICHAELIS, S	1983	154	366	J BACTERIOL
MILLER, J H	1972			EXPT MOL GENETICS
MILLER, S I	1990	172	2485	J BACTERIOL
MILLER, S I	1986	14	7341	NUCLEIC ACIDS RES
MILLER, S I	1989	86	5054	P NATL ACAD SCI USA
MILLER, V L	1988	170	2575	J BACTERIOL
MORRIS, J G	1988	109	261	ANN INTERN MED
MORRIS, J G	1987	53	193	APPL ENVIRON MICROB
MORRIS, J G	1987	40	55	FEMS MICROBIOL LETT
MORRIS, J G	1985	312	343	NEW ENGL J MED
NEALSON, K H	1979	4	105	TRENDS BIOCHEM SCI
PEARSON, W R	1988	85	2444	P NATL ACAD SCI USA
POOLE, K	1988	56	2967	INFECT IMMUN
PRINCE, R W	1991	5	2823	MOL MICROBIOL
RUBY, E G	1976	151	574	BIOL BULL
SALINAS, P C	1989	86	3529	P NATL ACAD SCI USA
SAMBROOK, J	1989			MOL CLONING LABORATO
SANGER, F	1977	74	5463	P NATL ACAD SCI USA
SCHAFFER, S	1985	200	110	MOL GEN GENET

SIMPSON, L M	1987	15	155	CURR MICROBIOL
SIMPSON, L M	1983	42	644	INFECT IMMUN
SIMPSON, L M	1987	55	269	INFECT IMMUN
SOUTHERN, E M	1975	98	503	J MOL BIOL
STAGGS, T M	1991	173	417	J BACTERIOL
STASKAWICZ, B	1987	169	5789	J BACTERIOL
SWARTZMAN, E	1990	172	6797	J BACTERIOL
TESTA, J	1984	45	458	INFECT IMMUN
WRIGHT, A C	1981	34	503	INFECT IMMUN
WRIGHT, A C	1985	50	922	INFECT IMMUN
WRIGHT, A C	1990	58	1769	INFECT IMMUN
YOSHIDA, S I	1985	47	446	INFECT IMMUN

L133 ANSWER 26 OF 27 EMBASE COPYRIGHT (c) 2010 Elsevier B.V. All rights reserved on STN

ACCESSION NUMBER: 2006197277 EMBASE Full-text
TITLE: Identification of Salmonella enterica serovar Typhimurium genes important for survival in the swine gastric environment.
AUTHOR: Bearson, Shawn M. D. (correspondence); Rasmussen, Mark A.
CORPORATE SOURCE: Pre-harvest Food Safety and Enteric Diseases Research Unit, National Animal Disease Center, Ames, IA 50010, United States. sbearson@nadc.ars.usda.gov
AUTHOR: Bearson, Bradley L.
CORPORATE SOURCE: Swine Odor and Manure Management Research Unit, National Soil Tilth Laboratory, Ames, IA 50010, United States.
AUTHOR: Bearson, Shawn M. D. (correspondence)
CORPORATE SOURCE: USDA, ARS, NADC, 2300 Dayton Ave., Ames, IA 50014, United States. sbearson@nadc.ars.usda.gov
SOURCE: Applied and Environmental Microbiology, (Apr 2006) Vol. 72, No. 4, pp. 2829-2836.
Refs: 46
ISSN: 0099-2240 CODEN: AEMIDF
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology: Bacteriology, Mycology, Parasitology and Virology
LANGUAGE: English
SUMMARY LANGUAGE: English
ENTRY DATE: Entered STN: 23 May 2006
Last Updated on STN: 23 May 2006

ABSTRACT: Since the stomach is a first line of defense for the host against ingested microorganisms, an ex vivo swine stomach contents (SSC) assay was developed to search for genes important for Salmonella enterica serovar Typhimurium survival in the hostile gastric environment. Initial characterization of the SSC assay (pH 3.87) using previously identified, acid-sensitive serovar Typhimurium mutants revealed a 10-fold decrease in survival for a phoP mutant following 20 min of challenge and no survival for mutants oirpoS or fur. To identify additional genes, a signature-tagged mutagenesis bank was constructed and screened in the SSC assay. Nineteen mutants were identified and individually analyzed in the SSC and acid tolerance response assays; 13 mutants exhibited a 10-fold or greater sensitivity in the SSC assay compared to the wild-type strain, but only 3 mutants displayed a 10-fold or greater decrease in survival following pH 3.0 acidic challenge. Further examination determined that the lethal effects of the SSC are pH dependent but that low pH is not the sole killing mechanism(s). Gas chromatography analysis of the SSC revealed lactic acid levels of 126 mM. Upon investigating the effects of lactic acid on serovar Typhimurium survival in a synthetic gastric fluid, not only was a concentration- and time-dependent lethal effect observed, but the phoP, rpoS, fur, and pnp genes were identified

as involved in protection against lactic acid exposure. These studies indicate a role in gastric survival for several serovar Typhimurium genes and imply that the stomach environment is defined by more than low pH.

CONTROLLED TERM: Medical Descriptors:
article
bacterial gene
bacterial infection: ET, etiology
bacterium mutant
colony forming unit
fur gene
gas chromatography
*gastroenteritis: ET, etiology
gastrointestinal infection: ET, etiology
genotype
nonhuman
nucleotide sequence
phoP gene
pnp gene
polymerase chain reaction
rpoS gene
*Salmonella enterica
*Salmonella typhimurium
stomach juice
stomach pH
survival
CONTROLLED TERM: Drug Descriptors:
lactic acid
CAS REGISTRY NO.: (lactic acid) 113-21-3, 50-21-5

L133 ANSWER 27 OF 27 EMBASE COPYRIGHT (c) 2010 Elsevier B.V. All rights reserved on STN
ACCESSION NUMBER: 1992007009 EMBASE Full-text
TITLE: Regulation of toxA and regA by the Escherichia coli fur gene and identification of a Fur homologue in Pseudomonas aeruginosa PA103 and PA01.
AUTHOR: Prince, P.W.; Storey, D.G.; Vasil, A.I.; Vasil, M.L. (correspondence)
CORPORATE SOURCE: Dept. Microbiol./Immunology, University of Colorado, Health Science Center, Denver, CO 80262, United States.
SOURCE: Molecular Microbiology, (1991) Vol. 5, No. 11, pp. 2823-2831.
ISSN: 0950-382X CODEN: MOMIEE
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology: Bacteriology, Mycology, Parasitology and Virology
LANGUAGE: English
SUMMARY LANGUAGE: English
ENTRY DATE: Entered STN: 20 Mar 1992
Last Updated on STN: 20 Mar 1992
ABSTRACT: A multicopy plasmid containing the Escherichia coli fur ***gene*** was introduced into Pseudomonas aeruginosa strain PA103C. This strain contains a toxA-lacZ fusion integrated into its chromosome at the toxA locus. Beta-galactosidase synthesis in this strain is regulated by iron, as is seen for exotoxin A production. Beta-galactosidase synthesis and exotoxin A production in PA103 containing multiple copies of E. coli fur was still repressed in low iron conditions. The transcription of regA, a positive regulator of toxA, was also found to be inhibited by multiple copies of the E. coli fur gene. In addition, the ability of PA103C

containing multiple copies of E. coli fur to produce protease was greatly reduced relative to PA103C containing a vector control. A polyclonal rabbit serum containing antibodies that recognize E. coli Fur was used to screen whole-cell extracts from Vibrio cholerae, Shigella flexneri, Salmonella typhimurium and Pseudomonas aeruginosa. All strains tested expressed a protein that was specifically recognized by the anti-Fur serum. These results and those described above suggest that Fur structure and function are conserved in a variety of distinct bacterial genera and that at least some of these different genera use this regulatory protein to control genes encoding virulence factors.

CONTROLLED TERM: Medical Descriptors:
article
*escherichia coli
gene control
nonhuman
priority journal
*pseudomonas aeruginosa
salmonella typhimurium
*sequence homology
shigella flexneri
vibrio cholerae
CONTROLLED TERM: Drug Descriptors:
beta galactosidase: EC, endogenous compound
exotoxin a: TO, drug toxicity
exotoxin a: EC, endogenous compound
proteinase: EC, endogenous compound
unclassified drug
CAS REGISTRY NO.: (proteinase) 9001-92-7

TEXT SEARCH PART 2

```
=> fil pascal biotechno wpix biosis dissabs lifesci esbio biotechds bioeng
scisearch
FILE 'PASCAL' ENTERED AT 10:26:30 ON 30 NOV 2010
Any reproduction or dissemination in part or in full,
by means of any process and on any support whatsoever
is prohibited without the prior written agreement of INIST-CNRS.
COPYRIGHT (C) 2010 INIST-CNRS. All rights reserved.

FILE 'BIOTECHNO' ENTERED AT 10:26:30 ON 30 NOV 2010
COPYRIGHT (C) 2010 Elsevier Science B.V., Amsterdam. All rights reserved.

FILE 'WPIX' ENTERED AT 10:26:30 ON 30 NOV 2010
COPYRIGHT (C) 2010 THOMSON REUTERS

FILE 'BIOSIS' ENTERED AT 10:26:30 ON 30 NOV 2010
Copyright (c) 2010 The Thomson Corporation

FILE 'DISSABS' ENTERED AT 10:26:30 ON 30 NOV 2010
COPYRIGHT (C) 2010 ProQuest Information and Learning Company; All Rights Reserved.

FILE 'LIFESCI' ENTERED AT 10:26:30 ON 30 NOV 2010
COPYRIGHT (C) 2010 Cambridge Scientific Abstracts (CSA)

FILE 'ESBIOBASE' ENTERED AT 10:26:30 ON 30 NOV 2010
COPYRIGHT (C) 2010 Elsevier Science B.V., Amsterdam. All rights reserved.

FILE 'BIOTECHDS' ENTERED AT 10:26:30 ON 30 NOV 2010
COPYRIGHT (C) 2010 THOMSON REUTERS

FILE 'BIOENG' ENTERED AT 10:26:30 ON 30 NOV 2010
COPYRIGHT (C) 2010 Cambridge Scientific Abstracts (CSA)

FILE 'SCISEARCH' ENTERED AT 10:26:30 ON 30 NOV 2010
Copyright (c) 2010 The Thomson Corporation

=> d que l117; d que l124

L107          83 SEA PFUR? OR DELTAPFUR?
L108           4 SEA TTARA?
L117           0 SEA L107 AND L108



L99       249856 SEA SALMONELLA
L105         965 SEA MANNOSE(1A) PHOSPHATE ISOMERASE
L106        5259 SEA PMI OR ΔPMI OR DELTAPMI
L110     2667600 SEA MUTAT? OR MUTANT#
L120      100416 SEA L99(W) TYPHIMURIUM
L121          34 SEA (L105 OR L106) AND L110 AND L120
L123       13465 SEA L110(S)((L106 OR L105 OR L120))
L124          31 SEA L121 AND L123


=> s l124 not l129,l126

L134          21 L124 NOT (L129 OR L126)          L129,L126 WERE PREVIOUSLY PRINTED

=> fil capl; d que l24; d que l23; d que l33
```

```
FILE 'CAPLUS' ENTERED AT 10:26:35 ON 30 NOV 2010
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2010 AMERICAN CHEMICAL SOCIETY (ACS)


Copyright of the articles to which records in this database refer is
held by the publishers listed in the PUBLISHER (PB) field (available
for records published or updated in Chemical Abstracts after December
26, 1996), unless otherwise indicated in the original publications.
The CA Lexicon is the copyrighted intellectual property of the
American Chemical Society and is provided to assist you in searching
databases on STN.  Any dissemination, distribution, copying, or storing
of this information, without the prior written consent of CAS, is
strictly prohibited.

FILE COVERS 1907 - 30 Nov 2010  VOL 153 ISS 23
FILE LAST UPDATED: 29 Nov 2010  (20101129/ED)
REVISED CLASS FIELDS (/NCL) LAST RELOADED:  Aug 2010
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE:  Aug 2010

CAplus now includes complete International Patent Classification (IPC)
reclassification data for the fourth quarter of 2010.

CAS Information Use Policies apply and are available at:

http://www.cas.org/legal/infopolicy.html

This file contains CAS Registry Numbers for easy and accurate
substance identification.
'OBI' IS DEFAULT SEARCH FIELD FOR 'CAPLUS' FILE


L24             0 SEA FILE=CAPLUS SPE=ON  ABB=ON  TTARACP?/BI



L23             3 SEA FILE=CAPLUS SPE=ON  ABB=ON  PFUR/BI



L3          37998 SEA FILE=CAPLUS SPE=ON  ABB=ON  SALMONELLA/CW
L7          51696 SEA FILE=CAPLUS SPE=ON  ABB=ON  ATTENUAT?/OBI
L22           970 SEA FILE=CAPLUS SPE=ON  ABB=ON  PMI/BI
L28        328337 SEA FILE=CAPLUS SPE=ON  ABB=ON  MUTAT?/OBI OR MUTANT#/OBI
L29         18181 SEA FILE=CAPLUS SPE=ON  ABB=ON  L3(L)TYPHIMURIUM/OBI
L31            10 SEA FILE=CAPLUS SPE=ON  ABB=ON  L22 AND L28 AND L29
L32             9 SEA FILE=CAPLUS SPE=ON  ABB=ON  L22 AND L28 AND L29 AND L7
L33             1 SEA FILE=CAPLUS SPE=ON  ABB=ON  L31 NOT L32


=> s l23,l33 not l130,l35

L135            4 (L23 OR L33) NOT (L130 OR L35)          L130,L35 WERE PREVIOUSLY
                                                                    PRINTED

=> fil embase; d que 191; d que 192; d que 193; d que 195; d que 196

FILE 'EMBASE' ENTERED AT 10:26:36 ON 30 NOV 2010
```

FILE COVERAGE: EMBASE-originated material 1947 to 30 Nov 2010 (20101130/ED)
Unique MEDLINE content 1948 to present

EMBASE is now updated daily. SDI frequency remains weekly (default) and biweekly.

This file contains CAS Registry Numbers for easy and accurate substance identification.

For further assistance, please contact your local helpdesk.

```
L77           3 SEA FILE=EMBASE SPE=ON  ABB=ON  TTARA?
L83          25 SEA FILE=EMBASE SPE=ON  ABB=ON  PFUR?
L91           0 SEA FILE=EMBASE SPE=ON  ABB=ON  L77 AND L83


L68       67092 SEA FILE=EMBASE SPE=ON  ABB=ON  SALMONELLA+NT/CT
L77           3 SEA FILE=EMBASE SPE=ON  ABB=ON  TTARA?
L83          25 SEA FILE=EMBASE SPE=ON  ABB=ON  PFUR?
L92           0 SEA FILE=EMBASE SPE=ON  ABB=ON  L68 AND (L77 OR L83)


L68       67092 SEA FILE=EMBASE SPE=ON  ABB=ON  SALMONELLA+NT/CT
L73         325 SEA FILE=EMBASE SPE=ON  ABB=ON  MANNOSE PHOSPHATE ISOMERASE/CT

L93           5 SEA FILE=EMBASE SPE=ON  ABB=ON  L73 AND L68


L69       25567 SEA FILE=EMBASE SPE=ON  ABB=ON  SALMONELLA TYPHIMURIUM/CT
L75        1095 SEA FILE=EMBASE SPE=ON  ABB=ON  PMI OR ΔPMI OR DELTAPMI
L95           5 SEA FILE=EMBASE SPE=ON  ABB=ON  L69 AND L75


L68       67092 SEA FILE=EMBASE SPE=ON  ABB=ON  SALMONELLA+NT/CT
L75        1095 SEA FILE=EMBASE SPE=ON  ABB=ON  PMI OR ΔPMI OR DELTAPMI
L78       11332 SEA FILE=EMBASE SPE=ON  ABB=ON  LIVE VACCINE/CT
L79      189362 SEA FILE=EMBASE SPE=ON  ABB=ON  ATTENUAT?
L80      544225 SEA FILE=EMBASE SPE=ON  ABB=ON  MUTATION+NT/CT
L81       48065 SEA FILE=EMBASE SPE=ON  ABB=ON  MUTANT/CT OR BACTERIUM
                 MUTANT+NT/CT
L82       31722 SEA FILE=EMBASE SPE=ON  ABB=ON  MUTANT PROTEIN/CT
L96           5 SEA FILE=EMBASE SPE=ON  ABB=ON  L75 AND L68 AND (L78 OR L79 OR
                 L80 OR L81 OR L82)


=> s 193,195,196 not l131,197

L136         11 (L93 OR L95 OR L96) NOT (L131 OR L97)        L131,L97 WERE
                                                             PREVIOUSLY PRINTED

=> fil medl; d que 146; d que 145; d que 161; d que 162; d que 164

FILE 'MEDLINE' ENTERED AT 10:26:38 ON 30 NOV 2010
```

```
FILE LAST UPDATED: 27 Nov 2010 (20101127/UP).  FILE COVERS 1946 TO DATE.

MEDLINE and LMEDLINE have been updated with the 2010 Medical Subject
Headings (MeSH) vocabulary and tree numbers from the U.S.  National Library
of Medicine (NLM).  Additional information is available at

http://www.nlm.nih.gov/pubs/techbull/nd09/nd09_medline_data_changes_2010.html.

The Medline file has been reloaded effective January 24, 2010.  See HELP
RLOAD for details.

This file contains CAS Registry Numbers for easy and accurate
substance identification.

See HELP RANGE before carrying out any RANGE search.


L46           0 SEA FILE=MEDLINE SPE=ON  ABB=ON  TTARACP?



L45           2 SEA FILE=MEDLINE SPE=ON  ABB=ON  PFUR



L37       48420 SEA FILE=MEDLINE SPE=ON  ABB=ON  SALMONELLA+NT/CT
L59         262 SEA FILE=MEDLINE SPE=ON  ABB=ON  MANNOSE-6-PHOSPHATE ISOMERASE/
                CT
L61           5 SEA FILE=MEDLINE SPE=ON  ABB=ON  L59 AND L37



L37       48420 SEA FILE=MEDLINE SPE=ON  ABB=ON  SALMONELLA+NT/CT
L40        7659 SEA FILE=MEDLINE SPE=ON  ABB=ON  VACCINES, ATTENUATED/CT
L41      491950 SEA FILE=MEDLINE SPE=ON  ABB=ON  MUTATION+NT/CT
L42       11848 SEA FILE=MEDLINE SPE=ON  ABB=ON  MUTANT PROTEINS+NT/CT
L44         958 SEA FILE=MEDLINE SPE=ON  ABB=ON  PMI OR ΔPMI
L62           3 SEA FILE=MEDLINE SPE=ON  ABB=ON  L44 AND L37 AND (L40 OR L41
                OR L42)



L44         958 SEA FILE=MEDLINE SPE=ON  ABB=ON  PMI OR ΔPMI
L63       22571 SEA FILE=MEDLINE SPE=ON  ABB=ON  SALMONELLA TYPHIMURIUM/CT
L64           4 SEA FILE=MEDLINE SPE=ON  ABB=ON  L63 AND L44


=> s l45,l61,l62,l64 not l132,l66

L137         10 (L45 OR L61 OR L62 OR L64) NOT (L132 OR L66)       L132,L66 WERE
                                                                  PREVIOUSLY PRINTED

=> => dup rem l137,l135,l134,l136
FILE 'MEDLINE' ENTERED AT 10:27:06 ON 30 NOV 2010

FILE 'CAPLUS' ENTERED AT 10:27:06 ON 30 NOV 2010
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2010 AMERICAN CHEMICAL SOCIETY (ACS)
```

```
FILE 'PASCAL' ENTERED AT 10:27:06 ON 30 NOV 2010
Any reproduction or dissemination in part or in full,
by means of any process and on any support whatsoever
is prohibited without the prior written agreement of INIST-CNRS.
COPYRIGHT (C) 2010 INIST-CNRS. All rights reserved.

FILE 'BIOTECHNO' ENTERED AT 10:27:06 ON 30 NOV 2010
COPYRIGHT (C) 2010 Elsevier Science B.V., Amsterdam. All rights reserved.

FILE 'WPIX' ENTERED AT 10:27:06 ON 30 NOV 2010
COPYRIGHT (C) 2010 THOMSON REUTERS

FILE 'BIOSIS' ENTERED AT 10:27:06 ON 30 NOV 2010
Copyright (c) 2010 The Thomson Corporation

FILE 'DISSABS' ENTERED AT 10:27:06 ON 30 NOV 2010
COPYRIGHT (C) 2010 ProQuest Information and Learning Company; All Rights Reserved.

FILE 'LIFESCI' ENTERED AT 10:27:06 ON 30 NOV 2010
COPYRIGHT (C) 2010 Cambridge Scientific Abstracts (CSA)

FILE 'ESBIOBASE' ENTERED AT 10:27:06 ON 30 NOV 2010
COPYRIGHT (C) 2010 Elsevier Science B.V., Amsterdam. All rights reserved.

FILE 'BIOTECHDS' ENTERED AT 10:27:06 ON 30 NOV 2010
COPYRIGHT (C) 2010 THOMSON REUTERS

FILE 'SCISEARCH' ENTERED AT 10:27:06 ON 30 NOV 2010
Copyright (c) 2010 The Thomson Corporation

FILE 'EMBASE' ENTERED AT 10:27:06 ON 30 NOV 2010
Copyright (c) 2010 Elsevier B.V. All rights reserved.
PROCESSING COMPLETED FOR L137
PROCESSING COMPLETED FOR L135
PROCESSING COMPLETED FOR L134
PROCESSING COMPLETED FOR L136
L138         25 DUP REM L137 L135 L134 L136 (21 DUPLICATES REMOVED)
                ANSWERS '1-10' FROM FILE MEDLINE
                ANSWERS '11-12' FROM FILE CAPLUS
                ANSWERS '13-15' FROM FILE WPIX
                ANSWER '16' FROM FILE BIOSIS
                ANSWER '17' FROM FILE DISSABS
                ANSWER '18' FROM FILE LIFESCI
                ANSWER '19' FROM FILE ESBIOBASE
                ANSWER '20' FROM FILE BIOTECHDS
                ANSWER '21' FROM FILE SCISEARCH
                ANSWERS '22-25' FROM FILE EMBASE

=> d iall 1-10; d ibib abs hitind 11-12; d ifull 13-15; d iall 16-25;fil hom

L138 ANSWER 1 OF 25     MEDLINE on STN                  DUPLICATE 1
ACCESSION NUMBER:   2009453047     MEDLINE  Full-text
DOCUMENT NUMBER:    PubMed ID: 19564693
TITLE:              Structures of mannose-6-phosphate isomerase from Salmonella
                    typhimurium bound to metal atoms and substrate:
                    implications for catalytic mechanism.
AUTHOR:             Sagurthi S R; Gowda Giri; Savithri H S; Murthy M R N
CORPORATE SOURCE:   Molecular Biophysics Unit, Indian Institute of Science,
                    Bangalore 560 012, India.
```

SOURCE: Acta crystallographica. Section D, Biological crystallography, (2009 Jul) Vol. 65, No. Pt 7, pp. 724-32. Electronic Publication: 2009-06-20. Journal code: 9305878. E-ISSN: 1399-0047. L-ISSN: 0907-4449.
PUB. COUNTRY: Denmark
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE) (RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200910
ENTRY DATE: Entered STN: 2 Jul 2009 Last Updated on STN: 2 Oct 2009 Entered Medline: 1 Oct 2009

ABSTRACT:
Mannose-6-phosphate isomerase (MPI) catalyzes the interconversion of mannose 6-phosphate and fructose 6-phosphate. X-ray crystal structures of MPI from Salmonella typhimurium in the apo form (with no metal bound) and in the holo form (with bound Zn2+) and two other structures with yttrium bound at an inhibitory site and complexed with Zn2+ and fructose 6-phosphate (F6P) were determined in order to gain insights into the structure and the isomerization mechanism. Isomerization involves acid/base catalysis with proton transfer between the C1 and C2 atoms of the substrate. His99, Lys132, His131 and Asp270 are close to the substrate and are likely to be the residues involved in proton transfer. The interactions observed at the active site suggest that the ring-opening step is probably catalyzed by His99 and Asp270. An active-site loop consisting of residues 130-133 undergoes conformational changes upon substrate binding. Zn2+ binding induces structural order in the loop consisting of residues 50-54. The metal atom appears to play a role in substrate binding and is probably also important for maintaining the architecture of the active site. Isomerization probably follows the previously suggested cis-enediol mechanism.

CONTROLLED TERM:
Amino Acid Sequence
*Biocatalysis
Catalytic Domain
Crystallography, X-Ray
Holoenzymes: CH, chemistry
Holoenzymes: ME, metabolism
*Mannose-6-Phosphate Isomerase: CH, chemistry
Mannose-6-Phosphate Isomerase: ME, metabolism
Models, Molecular
Molecular Sequence Data
Protein Structure, Tertiary
*Salmonella typhimurium: EN, enzymology
Sequence Alignment
Substrate Specificity
*Ytterbium: CH, chemistry
*Zinc: CH, chemistry
CAS REGISTRY NO.: 7440-64-4 (Ytterbium); 7440-66-6 (Zinc)
CHEMICAL NAME: 0 (Holoenzymes); EC 5.3.1.8 (Mannose-6-Phosphate Isomerase)

L138 ANSWER 2 OF 25 MEDLINE on STN DUPLICATE 3

ACCESSION NUMBER: 2008101007 MEDLINE Full-text
DOCUMENT NUMBER: PubMed ID: 18259054

TITLE: Cloning, expression, purification, crystallization and preliminary X-ray crystallographic analysis of the mannose 6-phosphate isomerase from Salmonella typhimurium.

AUTHOR: Gowda Giri; Sagurthi Someswar Rao; Savithri H S; Murthy M R N
CORPORATE SOURCE: Molecular Biophysics Unit, Indian Institute of Science,

Bangalore 560 012, India.
SOURCE: Acta crystallographica. Section F, Structural biology and crystallization communications, (2008 Feb 1) Vol. 64, No. Pt 2, pp. 81-4. Electronic Publication: 2008-01-18. Journal code: 101226117. E-ISSN: 1744-3091. L-ISSN: 1744-3091.
Report No.: NLM-PMC2374180.
PUB. COUNTRY: England: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE) (RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200808
ENTRY DATE: Entered STN: 9 Feb 2008
Last Updated on STN: 8 Aug 2008
Entered Medline: 7 Aug 2008

ABSTRACT:
Mannose 6-phosphate isomerase (MPI; EC 5.3.1.8) catalyzes the reversible isomerization of D-mannose 6-phosphate (M6P) and D-fructose 6-phosphate (F6P). In the eukaryotes and prokaryotes investigated to date, the enzyme has been reported to play a crucial role in D-mannose metabolism and supply of the activated mannose donor guanosine diphosphate D-mannose (GDP-D-mannose). In the present study, MPI was cloned from Salmonella typhimurium, overexpressed in Escherichia coli and purified using Ni-NTA affinity column chromatography. Purified MPI crystallized in space group P2(1)2(1)2(1), with unit-cell parameters a = 36.03, b = 92.2, c = 111.01 A. A data set extending to 1.66 A resolution was collected with 98.8% completeness using an image-plate detector system mounted on a rotating-anode X-ray generator. The asymmetric unit of the crystal cell was compatible with the presence of a monomer of MPI. A preliminary structure solution of the enzyme has been obtained by molecular replacement using Candida albicans MPI as the phasing model and the program Phaser. Further refinement and model building are in progress.

CONTROLLED TERM: Base Sequence
Chromatography, Affinity
Cloning, Molecular
Crystallization
Crystallography, X-Ray
DNA Primers
Electrophoresis, Polyacrylamide Gel
*Mannose-6-Phosphate Isomerase: CH, chemistry
Mannose-6-Phosphate Isomerase: GE, genetics
Mannose-6-Phosphate Isomerase: IP, isolation & purification
Polymerase Chain Reaction
*Salmonella typhimurium: EN, enzymology
CHEMICAL NAME: 0 (DNA Primers); EC 5.3.1.8 (Mannose-6-Phosphate Isomerase)
MEDLINE REFERENCE COUNT: 13 There are 13 cited references available in MEDLINE for this document.

REFERENCE(S): CITED REFERENCES AVAILABLE IN MEDLINE
(1) Shinabarger, D; J Biol Chem. 1991 Feb 5, V266(4), P2080-8. MEDLINE
(2) Gracy, R W; J Biol Chem. 1968 Aug 10, V243(15), P4109-16. MEDLINE
(3) Laemmli, U K; Nature. 1970 Aug 15, V227(5259), P680-5. MEDLINE
(4) Smith, D J; Yeast. 1995 Apr 15, V11(4), P301-10. MEDLINE
(5) Jensen, S O; Biochim Biophys Acta. 1998 Jan 15, V1382(1), P5-7. MEDLINE
(6) Jaeken, J; Am J Hum Genet. 1998 Jun, V62(6), P1535-9. MEDLINE
(7) Swan, Michael K; J Biol Chem. 2004 Sep 17, V279(38), P39838-45. MEDLINE
(8) Bradford, M M; Anal Biochem. 1976 May 7, V72, P248-54. MEDLINE
(9) Awadalla, H N; Trans R Soc Trop Med Hyg. 1987, V81(6), P915-7. MEDLINE
(10) Matthews, B W; J Mol Biol. 1968 Apr 28, V33(2), P491-7. MEDLINE

(11) Cleasby, A; Nat Struct Biol. 1996 May, V3(5), P470-9. MEDLINE
(12) de Koning, T J; Biochem Biophys Res Commun. 1998 Apr 7, V245(1), P38-42. MEDLINE
(13) DeRossi, Charles; J Biol Chem. 2006 Mar 3, V281(9), P5916-27. MEDLINE

L138 ANSWER 3 OF 25 MEDLINE on STN DUPLICATE 4
ACCESSION NUMBER: 2003545311 MEDLINE Full-text
DOCUMENT NUMBER: PubMed ID: 14622419
TITLE: An anti-repression Fur operator upstream of the promoter is required for iron-mediated transcriptional autoregulation in Helicobacter pylori.
AUTHOR: Delany Isabel; Spohn Gunther; Rappuoli Rino; Scarlato Vincenzo
CORPORATE SOURCE: Biochemistry and Molecular Biology Unit, IRIS, Chiron S r1, Via Fiorentina 1, 53100 Siena, Italy.
SOURCE: Molecular microbiology, (2003 Nov) Vol. 50, No. 4, pp. 1329-38.
Journal code: 8712028. ISSN: 0950-382X. L-ISSN: 0950-382X.
PUB. COUNTRY: England: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200404
ENTRY DATE: Entered STN: 20 Nov 2003
Last Updated on STN: 30 Apr 2004
Entered Medline: 29 Apr 2004

ABSTRACT:
The Fur protein acts as a regulator of iron-dependent gene transcription in bacteria. In Helicobacter pylori, Fur regulates iron-activated and iron-repressed promoters. It also acts as an autoregulatory rheostat of transcription to fine-tune its own expression in response to iron by binding to three operators at its own promoter Pfur. Using biochemical and genetic analyses, here we show that the distal upstream operator III (centred at -110) is essential for iron regulation of Pfur and functions as an anti-repression site that is bound by the iron-free form of Fur to induce transcription. Furthermore, operator I (centred at -50) may have a dual role both as a high-affinity binding site for Fur and as an UP element. We propose that its role is ensuring that Fur expression is not repressed below a minimum threshold level. Our data supports a novel promoter architecture and mechanism of regulation by Fur.

CONTROLLED TERM:
*Bacterial Proteins: GE, genetics
Bacterial Proteins: ME, metabolism
Base Sequence
*Gene Expression Regulation, Bacterial
*Helicobacter pylori: GE, genetics
Helicobacter pylori: ME, metabolism
*Iron: ME, metabolism
Models, Genetic
Molecular Sequence Data
*Operator Regions, Genetic
Promoter Regions, Genetic
Recombinant Fusion Proteins: ME, metabolism
*Repressor Proteins: GE, genetics
Repressor Proteins: ME, metabolism
*Transcription, Genetic
CAS REGISTRY NO.: 7439-89-6 (Iron)
CHEMICAL NAME: 0 (Bacterial Proteins); 0 (Recombinant Fusion Proteins); 0 (Repressor Proteins); 0 (ferric uptake regulating proteins, bacterial)

L138 ANSWER 4 OF 25 MEDLINE on STN DUPLICATE 6
ACCESSION NUMBER: 1993127654 MEDLINE Full-text
DOCUMENT NUMBER: PubMed ID: 1336259
TITLE: Regulation of purine biosynthesis. I. Isolation of add:: MudJ (lacZ, Kanr) insertions and genetic mapping.
AUTHOR: Wang A; Chen X; Dai X; Tang G
CORPORATE SOURCE: Institute of Microbiology, Academia Sinica, Beijing.
SOURCE: Wei sheng wu xue bao = Acta microbiologica Sinica, (1992 Oct) Vol. 32, No. 5, pp. 328-33.
Journal code: 21610860R. ISSN: 0001-6209. L-ISSN: 0001-6209.
PUB. COUNTRY: China
DOCUMENT TYPE: (ENGLISH ABSTRACT)
Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: Chinese
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199302
ENTRY DATE: Entered STN: 26 Feb 1993
Last Updated on STN: 29 Jan 1999
Entered Medline: 11 Feb 1993

ABSTRACT:
Report here is the isolation of adenosine deaminase deficient mutants and genetic mapping. Engineering transposon MudJ (lacZ, Kanr) was used for mutagenesis and six add:: MudJ were obtained among 20,000 Kanr transductants. Adenosine deaminase activity of these mutants were assayed and all are negative. Cotransduction analysis of add::MudJ indicated that add is 70% linked to pmi(31') and 37% linked to zxx1900::Tn10d-tet insertion which is 10% linked to purR(30'). Three points cross showed that add is located between pmi and Tn10d-tet insertion. Therefore the gene order is purR-zxx1900::Tn10d-tet-add-pmi.

CONTROLLED TERM: Adenosine Deaminase: GE, genetics
*Chromosome Mapping
*DNA Transposable Elements
Gene Expression Regulation, Bacterial
*Genome, Bacterial
*Purines: ME, metabolism
*Salmonella typhimurium: GE, genetics
Transduction, Genetic
CHEMICAL NAME: 0 (DNA Transposable Elements); 0 (Purines); EC 3.5.4.4 (Adenosine Deaminase)
GENE NAME: MudJ

L138 ANSWER 5 OF 25 MEDLINE on STN DUPLICATE 7
ACCESSION NUMBER: 1991147185 MEDLINE Full-text
DOCUMENT NUMBER: PubMed ID: 1997412
TITLE: Mutations at rfc or pmi attenuate Salmonella typhimurium virulence for mice.
AUTHOR: Collins L V; Attridge S; Hackett J
CORPORATE SOURCE: Department of Microbiology, University of Adelaide, Australia.
SOURCE: Infection and immunity, (1991 Mar) Vol. 59, No. 3, pp. 1079-85.
Journal code: 0246127. ISSN: 0019-9567. L-ISSN: 0019-9567.
Report No.: NLM-PMC258370.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English

FILE SEGMENT: Priority Journals
ENTRY MONTH: 199104
ENTRY DATE: Entered STN: 19 Apr 1991
Last Updated on STN: 6 Feb 1998
Entered Medline: 2 Apr 1991

ABSTRACT:
Insertion mutations were constructed in cloned pmi and rfc genes of Salmonella typhimurium, and these mutations were recombined (singly) into the chromosome of mouse-virulent S. typhimurium C5, displacing the wild-type alleles. Phage sensitivity profiles, lipopolysaccharide analysis, and DNA blotting all confirmed that the replacement events had occurred. The mutations were complemented by plasmid-borne wild-type alleles, as judged by the restoration of wild-type phage plaquing profiles and lipopolysaccharide production (both mutants) and the restoration of pmi-encoded enzyme production (pmi mutant). The virulence, persistence, and immunizing capacities of the mutants fed to mice were compared with those of the wild-type strain and complemented mutants. Both mutants were much reduced in virulence, with the rfc mutant being avirulent even at 10(9) bacteria per mouse. This mutant was also avirulent at up to 10(6) bacteria per mouse when administered intraperitoneally. Both the rfc and pmi mutant strains persisted in the Peyer's patches of the gut after feeding and were capable of colonizing the deeper tissues of the mice from such initial infective foci. Both mutant strains were effective as live oral vaccines (10(7) bacteria or more) against oral S. typhimurium challenge (10(4) 50% lethal doses; 6 x 10(8) bacteria) in mice.

CONTROLLED TERM: Check Tags: Female
Animals
Antibodies, Bacterial: IM, immunology
Cloning, Molecular
Electrophoresis, Polyacrylamide Gel
*Genes, Bacterial
Immunity
Mannose-6-Phosphate Isomerase: ME, metabolism
Mice
Mice, Inbred BALB C
*Mutagenesis, Insertional
Peyer's Patches: IM, immunology
Plasmids
Salmonella Infections, Animal: IM, immunology
Salmonella Infections, Animal: MO, mortality
Salmonella typhimurium: EN, enzymology
Salmonella typhimurium: GE, genetics
*Salmonella typhimurium: PY, pathogenicity
Virulence: GE, genetics

CHEMICAL NAME: 0 (Antibodies, Bacterial); EC 5.3.1.8 (Mannose-6-Phosphate Isomerase)

GENE NAME: pmi; rfc

MEDLINE REFERENCE COUNT: 26 There are 26 cited references available in MEDLINE for this document.

REFERENCE(S): CITED REFERENCES AVAILABLE IN MEDLINE

(1) Izhar, M; Infect Immun. 1982 Mar, V35(3), P1110-8. MEDLINE
(2) Myhal, M L; J Gen Microbiol. 1983 May, V129(5), P1549-58. MEDLINE
(3) Lyman, M B; Infect Immun. 1976 Jun, V13(6), P1539-42. MEDLINE
(4) Germanier, R; Infect Immun. 1971 Dec, V4(6), P663-73. MEDLINE
(5) Germanier, R; J Infect Dis. 1975 May, V131(5), P553-8. MEDLINE
(6) Makela, P H; J Infect Dis. 1973 Jul, V128, PSuppl:81-5. MEDLINE
(7) Germanier, R; Infect Immun. 1972 May, V5(5), P792-7. MEDLINE
(8) Wilkinson, R G; J Gen Microbiol. 1972 May, V70(3), P527-54. MEDLINE
(9) Nakano, M; Nature. 1969 Jun 14, V222(5198), P1085-6. MEDLINE

(10) Kang, S; J Bacteriol. 1967 Feb, V93(2), P584-91. MEDLINE
(11) Lugtenberg, B; FEBS Lett. 1975 Oct 15, V58(1), P254-8. MEDLINE
(12) NAIDE, Y; Proc Natl Acad Sci U S A. 1965 Jan, V53, P147-53. MEDLINE
(13) SUBBAIAH, T V; Nature. 1964 Mar 28, V201, P1298-9. MEDLINE
(14) Finlay, B B; Mol Microbiol. 1988 Nov, V2(6), P757-66. MEDLINE
(15) Hone, D; J Infect Dis. 1987 Jul, V156(1), P167-74. MEDLINE
(16) Hone, D; Rev Infect Dis. 1989 Nov-Dec, V11(6), P853-77. MEDLINE
(17) Mroczenski-Wildey, M J; Microb Pathog. 1989 Feb, V6(2), P143-52. MEDLINE
(18) Hone, D M; Infect Immun. 1988 May, V56(5), P1326-33. MEDLINE
(19) Levine, M M; J Clin Invest. 1987 Mar, V79(3), P888-902. MEDLINE
(20) Cohen, P S; Infect Immun. 1985 Apr, V48(1), P139-45. MEDLINE
(21) Nevola, J J; Infect Immun. 1985 Oct, V50(1), P152-9. MEDLINE
(22) Hashimoto-Gotoh, T; Gene. 1981 Dec, V16(1-3), P227-35. MEDLINE
(23) Stoker, N G; Gene. 1982 Jun, V18(3), P335-41. MEDLINE
(24) Cohen, P S; Infect Immun. 1983 Apr, V40(1), P62-9. MEDLINE
(25) Mintz, C S; Infect Immun. 1983 Apr, V40(1), P236-44. MEDLINE
(26) Hashimoto-Gotoh, T; J Bacteriol. 1977 Aug, V131(2), P405-12. MEDLINE

L138 ANSWER 6 OF 25 MEDLINE on STN DUPLICATE 8
ACCESSION NUMBER: 1991100353 MEDLINE Full-text
DOCUMENT NUMBER: PubMed ID: 1987157
TITLE: Localization of the terminal steps of O-antigen synthesis in Salmonella typhimurium.
AUTHOR: McGrath B C; Osborn M J
CORPORATE SOURCE: Department of Microbiology, University of Connecticut Health Center, Farmington 06030.
CONTRACT NUMBER: AI-08650 (United States NIAID NIH HHS)
GM-42339 (United States NIGMS NIH HHS)
SOURCE: Journal of bacteriology, (1991 Jan) Vol. 173, No. 2, pp. 649-54.
Journal code: 2985120R. ISSN: 0021-9193. L-ISSN: 0021-9193.
Report No.: NLM-PMC207056.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199102
ENTRY DATE: Entered STN: 29 Mar 1991
Last Updated on STN: 3 Feb 1997
Entered Medline: 20 Feb 1991

ABSTRACT:
Previous immunoelectron microscopic studies have shown that both the final intermediate in O-antigen synthesis, undecaprenol-linked O polymer, and newly synthesized O-antigenic lipopolysaccharide are localized to the periplasmic face of the inner membrane (C. A. Mulford and M. J. Osborn, Proc. Natl. Acad. Sci. USA 80:1159-1163, 1983). In vivo pulse-chase experiments now provide further evidence that attachment of O antigen to core lipopolysaccharide, as well as polymerization of O-specific polysaccharide chains, takes place at the periplasmic face of the membrane. Mutants doubly conditional in lipopolysaccharide synthesis [kdsA(Ts) pmi] were constructed in which synthesis of core lipopolysaccharide and O antigen are temperature sensitive and mannose dependent, respectively. Periplasmic orientation of O antigen:core lipopolysaccharide ligase was established by experiments showing rapid chase of undecaprenol-linked O polymer, previously accumulated at 42 degrees C in the absence of core synthesis, into lipopolysaccharide following resumption of core formation at 30 degrees C. In addition, chase of the monomeric O-specific tetrasaccharide unit into lipopolysaccharide was found in similar experiments in an O-polymerase-negative [rfc kdsA(Ts) pmi] mutant, suggesting that polymerization of O chains

also occurs at the external face of the inner membrane.
CONTROLLED TERM: Chromatography, Gel
Electrophoresis, Polyacrylamide Gel
Galactose: ME, metabolism
Kinetics
Mannose: ME, metabolism
*O Antigens
*Polyisoprenyl Phosphate Sugars: IP, isolation & purification
*Polysaccharides, Bacterial: BI, biosynthesis
Polysaccharides, Bacterial: IP, isolation & purification
*Salmonella typhimurium: IM, immunology
Salmonella typhimurium: ME, metabolism
Tritium
CAS REGISTRY NO.: 10028-17-8 (Tritium); 26566-61-0 (Galactose); 31103-86-3 (Mannose)
CHEMICAL NAME: 0 (O Antigens); 0 (O-specific polysaccharide, Salmonella); 0 (Polyisoprenyl Phosphate Sugars); 0 (Polysaccharides, Bacterial)
MEDLINE REFERENCE COUNT: 13 There are 13 cited references available in MEDLINE for this document.

REFERENCE(S): CITED REFERENCES AVAILABLE IN MEDLINE
(1) Goldman, R C; J Bacteriol. 1990 Sep, V172(9), P5352-9. MEDLINE
(2) Raetz, C R; Annu Rev Biochem. 1990, V59, P129-70. MEDLINE
(3) Kroncke, K D; J Bacteriol. 1990 Feb, V172(2), P1085-91. MEDLINE
(4) Palva, E T; Eur J Biochem. 1980, V107(1), P137-43. MEDLINE
(5) Goldman, R C; Eur J Biochem. 1980, V107(1), P145-53. MEDLINE
(6) Mulford, C A; Proc Natl Acad Sci U S A. 1983 Mar, V80(5), P1159-63. MEDLINE
(7) Laemmli, U K; Nature. 1970 Aug 15, V227(5259), P680-5. MEDLINE
(8) Osborn, M J; J Biol Chem. 1972 Jun 25, V247(12), P3973-86. MEDLINE
(9) Rick, P D; Proc Natl Acad Sci U S A. 1972 Dec, V69(12), P3756-60. MEDLINE
(10) Wilkinson, R G; J Gen Microbiol. 1972 May, V70(3), P527-54. MEDLINE
(11) Kent, J L; Biochemistry. 1968 Dec, V7(12), P4396-408. MEDLINE
(12) Kanegasaki, S; Proc Natl Acad Sci U S A. 1970 Oct, V67(2), P951-8. MEDLINE
(13) Creeger, E S; J Biol Chem. 1979 Feb 10, V254(3), P804-10. MEDLINE

L138 ANSWER 7 OF 25 MEDLINE on STN DUPLICATE 9
ACCESSION NUMBER: 1991348522 MEDLINE Full-text
DOCUMENT NUMBER: PubMed ID: 1879695
TITLE: Sequence of the phosphomannose isomerase-encoding gene of Salmonella typhimurium.
AUTHOR: Collins L V; Hackett J
CORPORATE SOURCE: Department of Microbiology and Immunology, University of Adelaide, South Australia.
SOURCE: Gene, (1991 Jul 15) Vol. 103, No. 1, pp. 135-6.
Journal code: 7706761. ISSN: 0378-1119. L-ISSN: 0378-1119.
PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-M64053; GENBANK-M64054; GENBANK-M64055; GENBANK-M64056; GENBANK-M64057; GENBANK-M64058; GENBANK-M64059; GENBANK-M64060; GENBANK-S53120; GENBANK-X57117
ENTRY MONTH: 199110
ENTRY DATE: Entered STN: 20 Oct 1991
Last Updated on STN: 6 Feb 1998
Entered Medline: 3 Oct 1991

ABSTRACT:
The pmi gene, encoding phosphomannose isomerase, of Salmonella typhimurium, was cloned in Escherichia coli K-12, and the protein product visualised in minicells. The cloned gene was sequenced; there was 77.4% nucleotide homology between the cloned pmi gene and the analogous manA gene of E. coli K-12, and 86.2% amino acid sequence homology between their presumptive gene products.
CONTROLLED TERM: Amino Acid Sequence
Base Sequence
Cloning, Molecular
Escherichia coli: ME, metabolism
*Mannose-6-Phosphate Isomerase: GE, genetics
Molecular Sequence Data
Open Reading Frames: GE, genetics
*Salmonella typhimurium: EN, enzymology
Salmonella typhimurium: GE, genetics
Sequence Homology, Nucleic Acid
CHEMICAL NAME: EC 5.3.1.8 (Mannose-6-Phosphate Isomerase)
GENE NAME: pmi

L138 ANSWER 8 OF 25 MEDLINE on STN
ACCESSION NUMBER: 2008567832 MEDLINE Full-text
DOCUMENT NUMBER: PubMed ID: 18756754
TITLE: Ecological stress and biological rhythms (on Materials of the International Congress "The health and education in XXI century". Conceptions of civilization diseases. PFUP, 2007).
AUTHOR: Frolov V A; Rapoport S I; Chibisov S M; Halberg F
SOURCE: Klinicheskaia meditsina, (2008) Vol. 86, No. 7, pp. 73-4. Journal code: 2985204R. ISSN: 0023-2149. L-ISSN: 0023-2149.
PUB. COUNTRY: Russia (Federation)
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: Russian
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200811
ENTRY DATE: Entered STN: 2 Sep 2008
Last Updated on STN: 19 Nov 2008
Entered Medline: 18 Nov 2008
CONTROLLED TERM: *Circadian Rhythm: PH, physiology
*Congresses as Topic
*Environmental Exposure: AE, adverse effects
*Environmental Health
*Environmental Illness
Environmental Illness: EP, epidemiology
Environmental Illness: ET, etiology
Environmental Illness: PP, physiopathology
Humans
World Health

L138 ANSWER 9 OF 25 MEDLINE on STN
ACCESSION NUMBER: 2001526253 MEDLINE Full-text
DOCUMENT NUMBER: PubMed ID: 11238967
TITLE: Molecular evolution of the GDP-mannose pathway genes (manB and manC) in Salmonella enterica.
AUTHOR: Jensen S O; Reeves P R
CORPORATE SOURCE: Department of Microbiology (G08), University of Sydney, New South Wales 2006, Australia.
SOURCE: Microbiology (Reading, England), (2001 Mar) Vol. 147, No. Pt 3, pp. 599-610.
Journal code: 9430468. ISSN: 1350-0872. L-ISSN: 1350-0872.

PUB. COUNTRY: England: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-AY012160; GENBANK-AY012161; GENBANK-AY012162;
GENBANK-AY012163; GENBANK-AY012164; GENBANK-AY012165;
GENBANK-AY012166; GENBANK-AY012167; GENBANK-AY012168;
GENBANK-AY012169; GENBANK-AY012170; GENBANK-AY012171;
GENBANK-AY012172; GENBANK-AY012173; GENBANK-AY012174;
GENBANK-AY012175; GENBANK-AY012176; GENBANK-AY012177;
GENBANK-AY012178; GENBANK-AY012179; GENBANK-AY012180;
GENBANK-AY012181; GENBANK-AY012182; GENBANK-AY012183;
GENBANK-AY012184; GENBANK-AY012185; GENBANK-AY012186;
GENBANK-AY012187; GENBANK-AY012188; GENBANK-AY012189;
GENBANK-AY012190; GENBANK-AY012191; GENBANK-AY012192;
GENBANK-AY012193; GENBANK-AY012194; GENBANK-AY012195;
GENBANK-AY012196; GENBANK-AY012197; GENBANK-AY012198;
GENBANK-AY012199; GENBANK-AY012200; GENBANK-AY012201
ENTRY MONTH: 200109
ENTRY DATE: Entered STN: 1 Oct 2001
Last Updated on STN: 1 Oct 2001
Entered Medline: 27 Sep 2001

ABSTRACT:
The evolutionary history of the GDP-mannose pathway in Salmonella enterica was studied via sequencing manB and manC genes from 13 representative strains for O antigens containing mannose and/or sugar derivatives of GDP-D-mannose. In addition, colanic acid (CA) manB and manC genes were sequenced from selected strains, as the basis for a detailed comparison. Interestingly, including the eight previously characterized O antigen gene clusters, 12 of the 21 S. enterica strains studied in total (each representing a different O antigen structure) possess a manB gene which displays DNA identity, ranging from 93 to 99%, to the CA manB gene of S. enterica LT2. Furthermore, the CA-like manB genes (as well as the CA manB and manC genes) display subspecies specificity, and the CA and CA-like manB genes (for individual strains) appear to be evolving in concert via gene conversion events. In comparison, the manC genes were generally not CA-like, a situation also apparent in Escherichia coli,and therefore most strongly reflected the evolutionary history of the S. enterica O antigen GDP-mannose pathway. It appears that, in relatively recent times, gene capture from a distant source has occurred infrequently, and that groups of manB and manC genes have been maintained and are continuing to evolve within S. enterica and more closely related species.

CONTROLLED TERM: *Bacterial Proteins: GE, genetics
Bacterial Proteins: ME, metabolism
Base Sequence
Cloning, Molecular
*Evolution, Molecular
*Guanosine Diphosphate Mannose: GE, genetics
Guanosine Diphosphate Mannose: ME, metabolism
*Mannose-6-Phosphate Isomerase: GE, genetics
Mannose-6-Phosphate Isomerase: ME, metabolism
Molecular Sequence Data
*Multienzyme Complexes: GE, genetics
Multienzyme Complexes: ME, metabolism
*Nucleotidyltransferases: GE, genetics
Nucleotidyltransferases: ME, metabolism
O Antigens: GE, genetics
Phylogeny
Polysaccharides: GE, genetics
*Salmonella enterica: GE, genetics

Sequence Analysis, DNA
CAS REGISTRY NO.: 3123-67-9 (Guanosine Diphosphate Mannose); 9012-87-7 (colanic acid)
CHEMICAL NAME: 0 (Bacterial Proteins); 0 (Multienzyme Complexes); 0 (O Antigens); 0 (Polysaccharides); EC 2.7.7.- (ManB protein, bacteria); EC 2.7.7.- (Nucleotidyltransferases); EC 5.3.1.8 (Mannose-6-Phosphate Isomerase)

L138 ANSWER 10 OF 25 MEDLINE on STN
ACCESSION NUMBER: 1981117027 MEDLINE Full-text
DOCUMENT NUMBER: PubMed ID: 7462153
TITLE: Reducing terminus of O-hapten accumulated in a Salmonella montevideo galE mutant.
AUTHOR: Heasley F A
CONTRACT NUMBER: AI-09644 (United States NIAID NIH HHS)
GM 07232 (United States NIGMS NIH HHS)
SOURCE: Journal of bacteriology, (1981 Jan) Vol. 145, No. 1, pp. 624-7.
Journal code: 2985120R. ISSN: 0021-9193. L-ISSN: 0021-9193.
Report No.: NLM-PMC217313.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
(RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198104
ENTRY DATE: Entered STN: 16 Mar 1990
Last Updated on STN: 6 Feb 1998
Entered Medline: 24 Apr 1981
ABSTRACT:
The O-haptenic polysaccharide of Salmonella montevideo has been reported to contain glyceraldehyde at its reducing terminus. However, O-hapten preparations from a pmi galE mutant contained products of partial hydrolysis of lipopolysaccharide, which in separate experiments gave [3H]glycerol upon treatment with perchloric acid and [3H]aBH4. Further study of the O-hapten reducing terminus suggested that it was actually mannose.
CONTROLLED TERM: Glycerol: AN, analysis
*Haptens: AN, analysis
Hydrolysis
*Lipopolysaccharides: AN, analysis
Mannose: AN, analysis
Mutation
Salmonella: GE, genetics
*Salmonella: IM, immunology
CAS REGISTRY NO.: 31103-86-3 (Mannose); 56-81-5 (Glycerol)
CHEMICAL NAME: 0 (Haptens); 0 (Lipopolysaccharides)
MEDLINE REFERENCE COUNT: 10 There are 10 cited references available in MEDLINE for this document.

REFERENCE(S): CITED REFERENCES AVAILABLE IN MEDLINE
(1) OSBORN, M J; Proc Natl Acad Sci U S A. 1963 Sep, V50, P499-506. MEDLINE
(2) COHEN, G N; Ann Inst Pasteur (Paris). 1956 Nov, V91(5), P693-720. MEDLINE
(3) DUBOIS, M; Nature. 1951 Jul 28, V168(4265), P167. MEDLINE
(4) Stocker, B A; Proc R Soc Lond B Biol Sci. 1978 Jun 5, V202(1146), P5-30. MEDLINE
(5) Jann, K; Biochem Biophys Res Commun. 1979 Feb 28, V86(4), P1185-91. MEDLINE
(6) Fuller, N A; Eur J Biochem. 1968 Apr, V4(3), P286-300. MEDLINE
(7) Droge, W; Eur J Biochem. 1970 May 1, V14(1), P175-84. MEDLINE
(8) Yuasa, R; J Bacteriol. 1969 Oct, V100(1), P433-44. MEDLINE

(9) Kent, J L; Biochemistry. 1968 Dec, V7(12), P4419-22. MEDLINE
(10) Gmeiner, J; Eur J Biochem. 1975 Feb 21, V51(2), P449-57. MEDLINE

L138 ANSWER 11 OF 25 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2007:483512 CAPLUS Full-text
DOCUMENT NUMBER: 147:89645
TITLE: Molecular characterization of the Fur protein of Listeria monocytogenes
AUTHOR(S): Ledala, Nagender; Pearson, Stacy L.; Wilkinson, Brian J.; Jayaswal, R. K.
CORPORATE SOURCE: Microbiology Group, Department of Biological Sciences, Illinois State University, Normal, IL, 61790-4120, USA
SOURCE: Microbiology (Reading, United Kingdom) (2007), 153(4), 1103-1111
CODEN: MROBEO; ISSN: 1350-0872
PUBLISHER: Society for General Microbiology
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Iron is essential for the survival of almost all organisms, although excess iron can result in the generation of free radicals which are toxic to cells. To avoid the toxic effects of free radicals, the concentration of intracellular iron is generally regulated by the ferric uptake regulator Fur in bacteria. The 150 aa fur ORF from Listeria monocytogenes was cloned into pRSETa, and the His-tagged fusion protein was purified by nickel affinity column chromatog. DNA binding activity of this protein was studied by an electrophoretic mobility shift assay using the end-labeled promoters PfhuDC and Pfur. The results showed a decrease in migration for both promoter DNAs in the presence of the Fur protein, and the change in migration was competitively inhibited with an excess of the same unlabeled promoters. No shift in migration was observed when a similar assay was performed using non-specific end-labeled DNA. The assay showed that binding of Fur to Pfur or PfhuDC was independent of iron or manganese ions, and was not inhibited in the presence of 2 mM EDTA. Inductively coupled plasma MS of the Fur protein showed no iron or manganese, but 0.48 mol zinc per mol protein was detected. A DNase I protection assay revealed that Fur specifically bound to and protected a 19 bp consensus Fur box sequence located in the promoters of fur and fhuDC. There was no requirement for iron or manganese in this assay also. However, Northern blot anal. showed an increase in fur transcription under iron-restricted compared to high-level conditions. Thus, the study suggests that under in vitro conditions, the affinity of the Fur protein for the 19 bp Fur box sequence does not require iron, but iron availability regulates fur transcription in vivo. Thus, the regulation by Fur in this intracellular pathogen may be dependent on either the structure of the DNA binding domain or other intracellular factors yet to be identified.

CC 6-3 (General Biochemistry)
Section cross-reference(s): 3, 10

IT Promoter (genetic element)
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(Pfur; mol. characterization of Fur protein of Listeria monocytogenes)

OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)
REFERENCE COUNT: 71 THERE ARE 71 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L138 ANSWER 12 OF 25 CAPLUS COPYRIGHT 2010 ACS on STN
ACCESSION NUMBER: 2002:900027 CAPLUS Full-text

DOCUMENT NUMBER: 138:132842
TITLE: Autoregulation of Helicobacter pylori Fur revealed by functional analysis of the iron-binding site
AUTHOR(S): Delany, Isabel; Spohn, Gunther; Pacheco, Ana-Beatriz F.; Ieva, Raffaele; Alaimo, Cristina; Rappuoli, Rino; Scarlato, Vincenzo
CORPORATE SOURCE: Department of Molecular Biology, IRIS, Chiron S.p.A., Siena, 53100, Italy
SOURCE: Molecular Microbiology (2002), 46(4), 1107-1122
CODEN: MOMIEE; ISSN: 0950-382X
PUBLISHER: Blackwell Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The ferric uptake regulator protein Fur regulates iron-dependent gene expression in bacteria. In Helicobacter pylori it has been shown to regulate iron-activated and iron-repressed genes. In this study, we show that H. pylori Fur protein regulates transcription from its own σ80 promoter Pfur in response to iron. Footprinting anal. shows that Fur binds at three distinct operators at Pfur overlapping and proximal to the promoter elements. Site-directed mutagenesis of the proposed iron-binding site of the protein results in derepression of Pfur and the loss of iron regulation. In vivo oligomerization assays reveals that the C-terminus of Fur is necessary for multimerization of the protein and that the mutations do not affect this activity. Mol. and phenotypic anal. of the mutant proteins provides evidence that the iron-binding site controls the specific affinity of Fur for the operators at Pfur and hence its repressive ability. In summary, the data presented are consistent with a model in which Fur acts as a rheostat of transcription to autoregulate its own expression in response to iron, which in turn controls expression of iron-induced and iron-repressed genes, providing maintenance of homeostasis.

CC 6-3 (General Biochemistry)
Section cross-reference(s): 10

IT Transcription factors
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(Fur (ferric uptake regulation); Fur protein from Helicobacter pylori regulates transcription from Pfur promoter in response to iron)

IT Molecular association
(Fur protein from Helicobacter pylori binds to multiple operators at Pfur promoter overlapping and proximal to promoter elements)

IT Helicobacter pylori
Transcriptional regulation
(Fur protein from Helicobacter pylori regulates transcription from Pfur promoter in response to iron)

IT Promoter (genetic element)
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(Fur protein from Helicobacter pylori regulates transcription from Pfur promoter in response to iron)

IT Genetic element
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(operator; Fur protein from Helicobacter pylori binds to multiple operators at Pfur promoter overlapping and proximal to promoter elements)

IT 7439-89-6, Iron, biological studies
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(Fur protein from Helicobacter pylori regulates transcription from Pfur promoter in response to iron)

OS.CITING REF COUNT: 35 THERE ARE 35 CAPLUS RECORDS THAT CITE THIS RECORD (35 CITINGS)
REFERENCE COUNT: 56 THERE ARE 56 CITED REFERENCES AVAILABLE FOR THIS

L138 ANSWER 13 OF 25 WPIX COPYRIGHT 2010 THOMSON REUTERS on STN
DUPLICATE 2
ACCESSION NUMBER: 2008-E83936 [200833] WPIX
DOC. NO. CPI: C2008-160138 [200833]
TITLE: New live vaccine composition comprising a live attenuated Salmonella bacterium, useful for protecting an animal against avian influenza infection
DERWENT CLASS: B04; C06; D16
INVENTOR: BERMUDES D G; BERMUDES D
PATENT ASSIGNEE: (AVID-N) AVIDEX; (BERM-I) BERMUDES D G
COUNTRY COUNT: 121

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 2008039408	A2	20080403	(200833)*	EN	55[11]	
US 20080124355	A1	20080529	(200838)	EN		
WO 2008039408	A3	20080710	(200847)	EN		
EP 2081593	A2	20090729	(200950)	EN		
IN 2009KN01483	A	20090529	(200951)	EN		
AU 2007300519	A1	20080403	(200953)	EN		
CN 101720228	A	20100602	(201040)	ZH		
CA 2700218	A1	20080403	(201045)	EN		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2008039408	A2	WO 2007-US20578	20070924
US 20080124355	A1 Provisional	US 2006-826542P	20060922
US 20080124355	A1	US 2007-859569	20070921
AU 2007300519	A1	AU 2007-300519	20070924
CN 101720228	A	CN 2007-80043473	20070924
EP 2081593	A2	EP 2007-838725	20070924
EP 2081593	A2 PCT Application	WO 2007-US20578	20070924
IN 2009KN01483	A PCT Application	WO 2007-US20578	20070924
CN 101720228	A PCT Application	WO 2007-US20578	20070924
IN 2009KN01483	A	IN 2009-KN1483	20090421
CA 2700218	A1	CA 2007-2700218	20070924
CA 2700218	A1 PCT Application	WO 2007-US20578	20070924
CA 2700218	A1 PCT Nat. Entry	CA 2007-2700218	20100319

FILING DETAILS:

PATENT NO	KIND	PATENT NO
EP 2081593	A2 Based on	WO 2008039408 A
AU 2007300519	A1 Based on	WO 2008039408 A
CN 101720228	A Based on	WO 2008039408 A
CA 2700218	A1 Based on	WO 2008039408 A

PRIORITY APPLN. INFO: US 2007-859569 20070921
US 2006-826542P 20060922
INT. PATENT CLASSIF.:

MAIN: A61K039-112
IPC ORIGINAL: A61K0039-02 [I,A]; A61K0039-02 [I,C]; A61K0039-02 [I,A]; A61K0039-02 [I,C]; A61K0039-112 [I,A]; A61K0039-112 [I,C] ; A61K0039-112 [I,C]; A61K0039-112 [I,A]; A61K0039-112 [I,C]; A61K0039-145 [I,A]; A61K0039-145 [I,C]; A61K0039-295 [I,A]; A61K0039-295 [I,C]; A61K0039-295 [I,A]; A61K0039-295 [I,C]; A61P0031-00 [I,C]; A61P0031-16 [I,A]; C12N0001-21 [I,A]; C12N0001-21 [I,C]
ECLA: A61K0039-145; C12N0001-36; C12N0009-24
ICO: K61K0039:52B; K61K0039:52C; K61K0039:54A1; K61K0039:55V; M12N0760:05A
USCLASS NCLM: 424/200.100
NCLS: 435/252.300

BASIC ABSTRACT:

WO 2008039408 A2 UPAB: 20090806

NOVELTY - A new live vaccine composition for protecting an animal against avian influenza infection comprises a live attenuated Salmonella bacterium comprising: (1) an attenuating mutation in a genetic locus of the chromosome of the bacterium that attenuates virulence of the bacterium; or (2) an antigen-expressing DNA construct comprising a nucleotide sequence coding for an immunogenic polypeptide comprising an avian influenza H or N antigen and/or an immunogenic portion of the H or N antigen.

DETAILED DESCRIPTION - The new live vaccine composition for protecting an animal against avian influenza infection comprises a live attenuated Salmonella bacterium comprising: (1) an attenuating mutation in a genetic locus of the chromosome of the bacterium that attenuates virulence of the bacterium; or (2) an antigen-expressing DNA construct comprising a nucleotide sequence coding for an immunogenic polypeptide comprising an avian influenza H or N antigen and/or an immunogenic portion of the H or N antigen. The nucleotide sequence is operably linked to a promoter that permits expression of the immunogenic polypeptide from the DNA construct. The gene coding for the immunogenic polypeptide has at least one codon optimized for bacterial expression. The live vaccine composition elicits an immune response to at least one avian influenza antigen when administered orally to an animal.

INDEPENDENT CLAIMS are:

(1) a method of immunizing an animal against avian influenza; and (2) a kit adapted to be used to produce the live vaccine composition.

ACTIVITY - Virucide. No biological data given.

MECHANISM OF ACTION - Vaccine.

USE - The live vaccine composition comprising a live attenuated Salmonella bacterium is useful for protecting an animal against avian influenza infection (claimed).

TECHNOLOGY FOCUS:

BIOTECHNOLOGY - Preferred Composition: The live attenuated Salmonella bacterium is Salmonella typnimurium. The attenuating mutation is in a genetic locus comprising phoP, phoQ, Mt, cya, crp, poxA, rpoS, htrA, nuoG, pmi, gale, pabA, pts, damA, purA, purB, purl, zwf, ompR and/or Suwwan. The attenuating mutation is a deletion mutation. The attenuating mutation comprises at least a partial deletion mutation of phoP. The Salmonella bacterium comprises a lethal mutation, comprising a deletion in the asd gene. The immunogenic polypeptide comprises a fusion protein comprising a V antigen or its immunogenic portion linked to an F1 antigen, encoded on an antigen-expressing multi-copy plasmid. The origin of replication of the multi-copy plasmid is a ColE1, pUC, M15 or pBR322 plasmid origin of replication. The live attenuated Salmonella bacterium is genetically stabilized against genetic exchange with other organisms with respect to a wild type Salmonella of the same serovar. The live attenuated Salmonella bacterium is genetically stabilized with respect to a wild type Salmonella of the same serovar.

The live vaccine composition is produced from a kit comprising: (a) a first container comprising a bacterial expression codon optimized antigen from a pathogenic avian influenza virus strain containing unique genetically engineered restriction sites contained within at least one of a bacterial protein expression plasmid or a bacterial chromosomal protein expression vector which allows rapid exchange of small segments; and (b) a second container comprising bacterial flagellar vectors having at least one bacterial flagellar antigens. The Salmonella bacterium comprises multiple unique chromosomal localization vectors targeting at least IS200s, phage elements and metabolic genes for insertion of the expression codon. Preferred Kit: The kit further comprises a bacterial strain; where the bacterial expression codon allows rapid exchange of small segments, where the bacterial strain comprises multiple unique chromosomal localization vectors targeting at least IS200s, phage elements and metabolic genes for insertion of the expression codon. Preferred Method: Immunizing an animal against avian influenza comprises administering the live vaccine composition comprising a Salmonella bacterium that expresses an avian influenza H or N antigen, or an immunogenic portion of the H or N antigen. The live attenuated Salmonella bacterium is genetically stabilized through deletion of IS200 elements and bacteria phage and prophage elements, and genetically isolated from external phage infection by a constitutive expression of a P22 phage repressor.

EXTENSION ABSTRACT:

EXAMPLE - No suitable example given.

FILE SEGMENT: CPI

MANUAL CODE: CPI: B04-F10A8; B04-F10A8E; B14-A02B2; B14-G01; B14-S11A; B14-S11D2; B14-S12; C04-F10A8; C04-F10A8E; C14-A02B2; C14-G01; C14-S11A; C14-S11D2; C14-S12; D05-H07

L138 ANSWER 14 OF 25 WPIX COPYRIGHT 2010 THOMSON REUTERS on STN

ACCESSION NUMBER: 2010-M57584 [201066] WPIX

TITLE: New salmonella enterica comprising protein glycosylation operon of Campylobacter jejuni derivative and presents N-glycan of Campylobacter jejuni derivative on its cell surface, useful for treating Salmonella infections

DERWENT CLASS: B04; C06; D13; D16

INVENTOR: AEBI M; AHUJA U; AMBER S; ILG K; SCHWARZ F

PATENT ASSIGNEE: (ETHE-C) EIDGENOESSISCHE TECH HOCHSCHULE ZUERICH

COUNTRY COUNT: 113

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 2010108682	A1	20100930	(201066)*	EN	39[4]	

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2010108682	A1	WO 2010-EP1884	20100325

PRIORITY APPLN. INFO: EP 2009-4445 20090327

INT. PATENT CLASSIF.:

IPC ORIGINAL: A61K0039-106 [I,A]; A61K0039-106 [I,C]; C07K0014-195 [I,C]; C07K0014-205 [I,A]; C12N0001-20 [I,A]; C12N0001-20 [I,C]; C12N0001-36 [I,A]; C12N0001-36 [I,C]

BASIC ABSTRACT:

WO 2010108682 A1 UPAB: 20101014

NOVELTY - Salmonella enterica comprising at least one protein glycosylation (pgl) operon of Campylobacter jejuni or its functional derivative and presents at least one N-glycan of Campylobacter jejuni or its N-glycan derivative on its cell surface, is new.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is/are included for production of the Salmonella enterica. ACTIVITY - Antibacterial; Antidiarrheic. Test details described, no results given.

MECHANISM OF ACTION - Vaccine.

USE - For preparing a medicament (preferably vaccine), pharmaceutical composition, food or feed, food or feed additive for the prevention and/or treatment of Campylobacter jejuni and Salmonella infections in human and animal including live stock such as cattle and poultry (all claimed).

ADVANTAGE - The Salmonella strain does not elicit pathogenic effects when administered to an animal or human in live and/or inactivated form.

TECHNOLOGY FOCUS:

BIOLOGY - Preparation (claimed): Production of Salmonella enterica involves: introducing into Salmonella enterica by at least one plasmid vector or by genomic integration at least one pgl operon of Campylobacter jejuni or its functional derivative (preferably at least one pgl operon, where at least one (preferably all) genes for bacillosamine biosynthesis are inactivated; and introducing mutations and/or deletions in the wbaP gene leading to complete inactivation of O-antigen biosynthesis. Preferred Species: The Salmonella enterica selected from Salmonella typhimurium, enteriditis, heidelberg, gallinorum, hadar, agona, kentucky and infantis, (preferably Salmonella enterica serovar typhimurium strains). The Salmonella enterica comprises at least one pgl operon, where at least one genes for bacillosamine biosynthesis are inactivated by mutation and/or partial or complete deletion, preferably by partial and/or complete deletion of the genes pgl D, E, F, G. The Salmonella enterica comprises at least one pgl operon, where the pglB gene product is inactivated by mutation and/or deletion. The Salmonella enterica (preferably serovar typhimurium strain) comprises: (a) at least one pgl operon of Campylobacter jejuni or its functional derivative (preferably at least one pgl operon, where at least one gene for bacillosamine biosynthesis are inactivated; and mutations and/or deletions in the wbaP gene leading to complete inactivation of O-antigen biosynthesis; and (b) and presents on its cell surface at least one of the N-glycan of Campylobacter jejuni or its N-glycan derivative. The N-glycans and their derivatives are linked to at least one homologous or heterologous Salmonella polypeptide that are transferred to and presented on the cell surface, preferably linked to at least one polypeptide comprising at least one consensus sequon Asn-Z'-Ser/Thr (preferably Asp/Glu-X-Asn-Z'-Ser/Thr (SEQ ID NO: 1). The N-glycans and their derivatives are linked to the Salmonella lipid A core or its functionally equivalent derivative. The Salmonella strain is attenuated, preferably by mutations selected from pab, pur, aro, aroA, asd, dap, nadA, pncB, galE, pmi, fur, rpsL, ompR, htrA, hemA, cdt, cya, crp, phoP, phoQ, rfc, poxA or galU, (preferably mutations aroA, cya or crp). The Salmonella strain is attenuated by partial or full inactivation of the expression of the O-antigen, (preferably by at least one mutation and/or deletion in the rfb gene cluster, especially in the wbaP gene, particularly deletion of the wbaP gene).

X and Z'=natural amino acid except Pro.

ORGANIC CHEMISTRY - Preferred Components: The N-glycan derivative is GalNAc-a1,4-GalNAc-a1,4-(Glc- beta -1,3)GalNAc-a1,4-Gal-NAc-a1,4-GalNAc-a1,3-2,4-diacetamido-2,4,6-trideoxy-D-glucopyranose (I); or GalNAc-a1,4-GalNAc-a1,4-(Glc- beta -1,3)GalNAc-a1,4-Gal-NAc-a1,4-GalNAc-a1,3-GlcNAc (II).

EXTENSION ABSTRACT:

ADMINISTRATION - Administration is intravenous, intramuscular, subcutaneous, intranasal, intrasynovial, by infusion, sublingual, transdermal, oral, topical or by inhalation. No dosage details given. EXAMPLE - No suitable example given.

FILE SEGMENT: CPI
MANUAL CODE: CPI: B04-F10A8E; B14-A01A8; B14-S11D2; C04-F10A8E; C14-A01A8; C14-S11D2; D03-G01; D03-H01T2B; D05-H08; D05-H14A1

L138 ANSWER 15 OF 25 WPIX COPYRIGHT 2010 THOMSON REUTERS on STN
ACCESSION NUMBER: 2000-302849 [200026] WPIX
DOC. NO. CPI: C2000-091734 [200026]
TITLE: New live attenuated Salmonella vaccines used for protecting poultry against infection by avian pathogenic gram-negative bacteria comprise an rfb/rfc gene cluster of the bacteria stably integrated in Salmonella chromosome
DERWENT CLASS: B04; C06; D16
INVENTOR: ROLAND K L
PATENT ASSIGNEE: (MEGA-N) MEGAN HEALTH INC
COUNTRY COUNT: 85

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 2000004919	A2	20000203	(200026)*	EN	48[5]	
AU 9949914	A	20000214	(200029)	EN		
EP 1100536	A2	20010523	(200130)	EN		
ZA 2001000976	A	20011031	(200173)	EN	70	
CN 1315871	A	20011003	(200205)	ZH		
BR 9912410	A	20020115	(200214)	PT		
US 6399074	B1	20020604	(200242)	EN		
JP 2002521345	T	20020716	(200261)	JA	68	
MX 2001000884	A1	20020601	(200365)	ES		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2000004919	A2	WO 1999-US15842	19990713
US 6399074	B1	US 1998-122441	19980724
AU 9949914	A	AU 1999-49914	19990713
BR 9912410	A	BR 1999-12410	19990713
CN 1315871	A	CN 1999-810045	19990713
EP 1100536	A2	EP 1999-933977	19990713
EP 1100536	A2	WO 1999-US15842	19990713
BR 9912410	A	WO 1999-US15842	19990713
JP 2002521345	T	WO 1999-US15842	19990713
MX 2001000884	A1	WO 1999-US15842	19990713
JP 2002521345	T	JP 2000-560912	19990713
MX 2001000884	A1	MX 2001-884	20010124
ZA 2001000976	A	ZA 2001-976	20010205

FILING DETAILS:

PATENT NO	KIND		PATENT NO
AU 9949914	A	Based on	WO 2000004919 A
EP 1100536	A2	Based on	WO 2000004919 A

BR 9912410 A Based on WO 2000004919 A
JP 2002521345 T Based on WO 2000004919 A
MX 2001000884 A1 Based on WO 2000004919 A

PRIORITY APPLN. INFO: US 1998-122441 19980724
INT. PATENT CLASSIF.:
MAIN: A61K039-112
IPC RECLASSIF.: A61K0039-02 [I,A]; A61K0039-02 [I,C]; A61K0039-112 [I,A]; A61K0039-112 [I,C]; A61K0039-116 [I,A]; A61K0039-116 [I,C]; A61P0031-00 [I,C]; A61P0031-04 [I,A]; C07K0014-195 [I,C]; C07K0014-245 [I,A]; C07K0014-255 [I,A]
ECLA: A61K0039-02T3; A61K0039-116; C07K0014-245; C07K0014-255
ICO: K61K0039:55V
JAP. PATENT CLASSIF.:
MAIN/SEC.: A61K0039-112; A61P0031-04 171
FTERM CLASSIF.: 4C085; 4C201; 4C206; 4C085/AA03; 4C085/BA24; 4C085/CC04; 4C085/DD62; 4C085/EE01

BASIC ABSTRACT:
WO 2000004919 A2 UPAB: 20060116
NOVELTY - A vaccine (I) for immunization of birds against an avian pathogenic gram-negative (APGN) microbe (II), is new.
DETAILED DESCRIPTION - A vaccine (I) for immunization of birds against an avian pathogenic gram-negative (APGN) microbe (II), is new and comprises live cells of a recombinant Salmonella strain (III) expressing an O-antigen of (II), and having:
(1) a rfb/rfc gene cluster of (II) stably integrated into the Salmonella chromosome; and
(2) a mutation in the rfb gene cluster or rfc gene of (III) which inactivates expression of the O-antigen, where (III) is an attenuated mutant of a virulent Salmonella strain.
INDEPENDENT CLAIMS are also included for the following: (1) a method (IV) for immunizing a bird against an APGN microbe, comprising administering (I) to the bird; (2) a vaccine (V) for immunization of birds against at least two APGN microbes, comprising a mixture of live cells of first and second recombinant Salmonella strains, each strain having the features of (1) and (2) above;
(3) a vaccine (VI) for immunization of birds against at least two APGN microbes, comprising live cells of a recombinant Salmonella strain expressing an O-antigen of each of the APGN microbes, and having a rfb/rfc gene cluster of each of the APGN microbes stably integrated into the Salmonella chromosome, and having a mutation in the Salmonella rfb gene cluster or rfc gene which inactivates expression of the Salmonella O-antigen, wherein the recombinant Salmonella strain is an attenuated mutant of a virulent Salmonella strain; and
(4) a method (VII) of making a vaccine for immunizing a bird against an APGN microbe.
USE - The vaccines are used to immunize birds against pathogenic gram negative bacteria, especially avian pathogenic Escherichia coli (APEC), which cause diseases such as air sacculitis, cellulitis, colibacillosis, and peritonitis. Birds which may be immunized include geese, pheasants, and other domesticated birds, especially chickens and turkeys as well as non-domesticated birds such as parrots and parakeets. The recombinant Salmonella strain can also be used to deliver a desired gene product to the vaccinated bird. The avirulent microbes can be used as vectors for the synthesis of other proteins, including immunoregulatory molecules made by avian species that might stimulate or suppress various physiological functions such as growth rate, fat or protein content.
ADVANTAGE - As (I) is an oral vaccine, it costs less to produce and is easier to administer in the field than an injectable vaccine. The recombinant Salmonella strain protects against both the gram negative microbe and the parental Salmonella strain. Also, as Salmonella sp. persist in the gut, they provide a more vigorous immune response. TECHNOLOGY FOCUS:

BIOLOGY - Preferred Microbe: The APGN microbes include avian pathogenic Salmonella strains of group C and D, species of Campylobacter, Bacteroides, Bordetella, Haemophilus, Pasteurella, Francisella, Actinobacillus, Klebisella, Moraxells, Pseudomonas, Proteus, and Ornithobacterium and preferably, avian pathogenic Escherichia coli (APEC) strains O3, O6, O8, O15, O71, O74, O87, O88, O95, O103 and O109.

BIOTECHNOLOGY - Preparation: (VII) comprises selecting a Salmonella strain capable of colonizing the bird, integrating into the Salmonella chromosome an rfb/rfc gene cluster from the APGN microbe, introducing a mutation into the Salmonella rfb gene cluster and/or into the rfc gene and isolating recombinant Salmonella bacteria which expresses O-antigen characteristic of the APEC (avian pathogenic Escherichia coli) strain but which do not express Salmonella O-antigen. The integration and introducing steps can be performed in any order. The selected Salmonella strain is preferably a virulent strain, and the method also comprises introducing into the virulent Salmonella strain an attenuating mutation in a gene selected from pab, pur, aro, asd, dap, nadA, pncB, galE, pmi, fur, rpsL, ompR, htrA, hemA, cdt, cya, crp, phoP, phoQ, rfc, poxA, galU, and then isolating mutant having attenuated virulence.

Preferred Vaccine: The integrated rfb/rfc gene cluster comprises an attenuating mutation in a Salmonella gene selected from pab, pur, aro, asd, dap, nadA, pncB, galE, pmi, fur, rpsL, ompR, htrA, hemA, cdt, cya, crp, phoP, phoQ, rfc, poxA, galU. The attenuating mutation is especially a defined deletion/insertion in the Salmonella crp gene, and the recombinant Salmonella also has an attenuating mutation in the crp gene. The recombinant Salmonella strain also has a recombinant polynucleotide encoding a desired gene product, which is especially an antigen from an avian pathogenic organism, suc as a APEC fimbriae or an iron-regulated outer membrane protein.

EXTENSION ABSTRACT:

ADMINISTRATION - (I) is administered by coarse spray at the day of hatching, followed by oral administration of a booster amount of the vaccine, especially at day 13, 14 or 15 after the day of hatching. Dosage is in concentrations ranging from 105 to 108 live cells per bird, preferably 5x107 live cells/bird. SPECIFIC MICROORGANISMS - The APGN microbe is especially avian pathogenic Escherichia coli (APEC) strain O1, 02, 035 or O78. EXAMPLE - A recombinant Salmonella typhimurium strain coexpressing S. typhimurium group B lipopolysaccharide (LPS) and Escherichia coli O78 LPS was created and designated MGN996. The chickens used were White leghorns hatched from fertile eggs from specific pathogen-free chickens. The birds were vaccinated twice, once at day of hatch and again at 14 days of age. Chickens were inoculated at day of hatch with 4.6 x 10 CFU of MGN996 per chick by coarse spray. 26 birds were vaccinated with MGN996 and 12 chick were mock vaccinated with BSG (undefined). At day 14, vaccinated birds were boosted with 3.8 x 107 CFU of MGN996 orally. On day 28, all birds were challenged with 7.5 x 107 CFU of E. coli strain x 7122 intratracheally. Four days later, the birds were euthanized by CO2 inhalation, and necropsied. The birds were scored for lesions associated with avian pathogenic E. coli (APEC) infection. The mean lesions indicated that birds vaccinated with MGN996 were significantly protected from challenge when compared to non-vaccinated control birds. In addition, vaccinated birds showed a significant reduction in overall mean lesion scores.

FILE SEGMENT: CPI

MANUAL CODE: CPI: B04-B04C1; B04-E02F; B04-F10A8E; B11-C08E5; B12-K04F; B14-A01A3; B14-S03; C04-B04C1; C04-E02F; C04-F10A8E; C11-C08E5; C12-K04F; C14-A01A3; C14-S03; D05-H07; D05-H12A; D05-H14A1; D05-H18

L138 ANSWER 16 OF 25 BIOSIS COPYRIGHT (c) 2010 The Thomson Corporation on STN
ACCESSION NUMBER: 1982:266644 BIOSIS Full-text
DOCUMENT NUMBER: PREV198274039124; BA74:39124
TITLE: MUTATIONS IN SALMONELLA-TYPHIMURIUM AFFECTING SYNTHESIS OF LIPO POLY SACCHARIDE CORE AT HIGH TEMPERATURE.
AUTHOR(S): LERMAN R D [Reprint author]; STOCKER B A D
CORPORATE SOURCE: DEP MED MICROBIOL, STANFORD UNIV SCH MED, STANFORD, CA 94305, USA
SOURCE: Wasmann Journal of Biology, (1981) Vol. 39, No. 1-2, pp. 42-49.
CODEN: WMJBA2. ISSN: 0043-0927.
DOCUMENT TYPE: Article
FILE SEGMENT: BA
LANGUAGE: ENGLISH
ABSTRACT:S. typhimurium mutants of class rfaH cannot form the galactose I unit of the lipopolysaccharide (LPS) core and so are resistant to phage FO but sensitive to phage C21. To test whether gene rfaH specifies the galactose transferase or a protein regulating its synthesis, rfaH ***mutants*** making galactose-deficient LPS when grown at 43° C but normal LPS at 30° C (using as parents pmi mutants, unable to make O side-chains of LPS unless supplied with mannose) were used. Of 120 mutagen-induced FO-resistant mutants isolated at 43° C, 20 were FO-sensitive at 30° C and 6 were sensitive to C21 at 43° C. The C21 resistant mutants may be temperature-sensitive rfaH mutants.
CONCEPT CODE: Biochemistry studies - Proteins, peptides and amino acids 10064
Biochemistry studies - Lipids 10066
External effects - Temperature as a primary variable 10614
Enzymes - Physiological studies 10808
Metabolism - Carbohydrates 13004
Metabolism - Lipids 13006
Metabolism - Proteins, peptides and amino acids 13012
Temperature - General measurement and methods 23001
Physiology and biochemistry of bacteria 31000
Genetics of bacteria and viruses 31500
Virology - Bacteriophage 33504
INDEX TERMS: Major Concepts
Enzymology (Biochemistry and Molecular Biophysics); Genetics; Metabolism; Microbiology; Physiology
INDEX TERMS: Miscellaneous Descriptors
PHAGE FO PHAGE C-21 GALACTOSE TRANSFERASE REGULATORY PROTEIN TEMPERATURE SENSITIVE MUTANTS RFA-H GENE
ORGANISM: Classifier
Viruses 03000
Super Taxa
Microorganisms
Taxa Notes
Microorganisms, Viruses
ORGANISM: Classifier
Enterobacteriaceae 06702
Super Taxa
Facultatively Anaerobic Gram-Negative Rods; Eubacteria; Bacteria; Microorganisms

Taxa Notes
Bacteria, Eubacteria, Microorganisms

L138 ANSWER 17 OF 25 DISSABS COPYRIGHT (C) 2010 ProQuest Information and Learning Company; All Rights Reserved on STN
ACCESSION NUMBER: 90:23256 DISSABS Order Number: AAR9106359
TITLE: THE TOPOLOGY OF THE TERMINAL STEPS OF O-ANTIGEN ASSEMBLY ON THE INNER MEMBRANE OF SALMONELLA TYPHIMURIUM
AUTHOR: MCGRATH, BARBARA CLAIRE [PH.D.]; OSBORN, MARY JANE [advisor]
CORPORATE SOURCE: THE UNIVERSITY OF CONNECTICUT (0056)
SOURCE: Dissertation Abstracts International, (1990) Vol. 51, No. 9B, p. 4194. Order No.: AAR9106359. 145 pages.
DOCUMENT TYPE: Dissertation
FILE SEGMENT: DAI
LANGUAGE: English
ENTRY DATE: Entered STN: 19921118
Last Updated on STN: 19921118
ABSTRACT: Previous immunoelectron microscopic evidence (Mulford, C. A., Osborn, M. J. (1983) Proc. Natl. Acad. Sci. USA. 80:1159-1163) has demonstrated that O-reactive LPS is transiently localized to the periplasmic face of the inner membrane prior to its translocation to the outer membrane. Furthermore, undecaprenol-P-linked polymeric O antigen accumulates at the periplasmic face in mutants which are blocked in LPS core biosynthesis. The in vivo pulse-chase experiments described here provide evidence that ligation of O antigen to core occurs at the periplasmic face of the inner membrane. Mutants doubly conditional for core ($kdsAts$) and O antigen ($galE$, pmi) when pulsed with ($\sp3$H) mannose at nonpermissive temperature for core biosynthesis (42$\sp\circ$), accumulate radioactively labeled, undecaprenol-linked O antigen. Upon shift to permissive temperature (30$\sp\circ$), the radioactivity rapidly chases into LPS. Similar experiments on a mutant which is also defective in polymerization of O antigen (rfc-), show that accumulated undecaprenol-P-linked O antigen teterasaccharide can also chase into LPS. This suggests that polymerization of O antigen also occurs at the periplasmic face of the inner membrane. Other pulse-chase experiments demonstrate that the in vivo transfer of previously accumulated polymeric O antigen to LPS core is blocked by the uncoupler 2,4 dinitrophenol (DNP). The results indicate that LPS core is synthesized in the presence of DNP, and is functional in an in vitro ligase assay. We therefore propose that the disruption of the membrane potential by DNP traps newly synthesized LPS core on the cytosolic face of the inner membrane, where it is inaccessible for ligation to the periplasmically oriented undecaprenol-linked O antigen.
CLASSIFICATION: 0307 BIOLOGY, MOLECULAR

L138 ANSWER 18 OF 25 LIFESCI COPYRIGHT 2010 CSA on STN
ACCESSION NUMBER: 81:59624 LIFESCI Full-text
TITLE: Mutations in Salmonella typhimurium Affecting Synthesis of LPS Core at High Temperature.
AUTHOR: Lerman, R.D.; Stocker, B.A.D.

CORPORATE SOURCE: Dep. Med. Microbiol., Stanford Univ. Sch. Med., Stanford, CA 94305, USA
SOURCE: WASMANN J. BIOL., (1981) vol. 39, no. 1-2.
DOCUMENT TYPE: Journal
FILE SEGMENT: G; J
LANGUAGE: English
SUMMARY LANGUAGE: English
ABSTRACT: Salmonella typhimurium mutants of class rfaH cannot form the galactose I unit of the lipopolysaccharide (LPS) core and so are resistant to phage FO but sensitive to phage C21. To test whether gene rfaH specifies the galactose-transferase or a protein regulating its synthesis the authors sought rfaH mutants making galactose-deficient LPS when grown at 43 degree C but normal LPS at 30 degree C (using as parents pmi mutants, unable to make O side-chains of LPS unless supplied with mannose). Of 120 mutagen-induced FO-resistant mutants isolated at 43 degree C 20 were FO-sensitive at 30 degree C; 6 were sensitive to C21 at 43 degree C and may be temperature-sensitive rfaH mutants.
CLASSIFICATION: 07320 Bacterial genetics; 02740 Genetics and evolution
UNCONTROLLED TERM: Salmonella typhimurium; temperature-sensitive mutant; lipopolysaccharides; genes; biosynthesis; effects on; rfaH gene; role

L138 ANSWER 19 OF 25 Elsevier Biobase COPYRIGHT 2010 Elsevier Science B.V. on STN
ACCESSION NUMBER: 2000000178 ESBIOBASE Full-text
TITLE: The Legionella pneumophila prp locus required during infection of macrophages and amoebae
AUTHOR(S): Stone, Barbara J.; Brier, Adam; Kwaik, Yousef Abu
CORPORATE SOURCE: Stone, Barbara J.; Brier, Adam; Kwaik, Yousef Abu (Dept. of Microbiology and Immunology, Univ. of Kentucky Chandler Med. Ctr., Lexington, KY 40536-0084 (US))
SOURCE: Microbial Pathogenesis (Dec 1999) Volume 27, Number 6, pp. 369-376, 49 refs.
CODEN: MIPAEV ISSN: 0882-4010
DOI: 10.1006/mpat.1999.0311
COUNTRY OF PUBLICATION: United Kingdom
DOCUMENT TYPE: Journal; Article
LANGUAGE: English
SUMMARY LANGUAGE: English
ENTRY DATE: Entered STN: 31 Jan 2009
Last updated on STN: 31 Jan 2009
ABSTRACT: Transposon mutagenesis was performed using mTn10phoA to identify Legionella pneumophila genes that are expressed under certain in vitro conditions, and are required for intracellular replication. Of the 1653 PhoA fusions examined, 19 PhoA + fusion mutants were isolated and screened for differential expression of fusion proteins after growth at 30 or 37°C, in the presence of low iron, or increased magnesium concentrations. The mutants were examined for their cytopathogenicity and intracellular replication within U937 macrophage-like cells and the protozoan Hartmannella vermiformis. One of the mutants generated, BS10, was defective in its multiplication within U937 macrophage-like cells and H. vermiformis. The defect in BS10 was complemented with a cosmid clone containing the wild type locus. The open reading frame interrupted by the insertion was homologous to prpD of Salmonella typhimurium and mmgE of Bacillus subtilis. CLASSIFICATION
CODE: 84.3.7 GENETICS AND MOLECULAR BIOLOGY, PROKARYOTIC
GENETICS, Genetics of Animal Pathogenesis; 85.7.13 APPLIED MICROBIOLOGY AND BIOTECHNOLOGY, MICROBIAL

METABOLISM AND PHYSIOLOGY, Virulence Factors; 86.7.3.5 IMMUNOLOGY AND INFECTIOUS DISEASES, IMMUNITY TO INFECTION, Medical and Veterinary Bacteriology, Virulence
SUPPLEMENTARY TERM: Intracellular; Iron; PhoA; pmi; prpD
ORGANISM NAME: Animalia; Bacillus subtilis; Bacteria (microorganisms); Hartmannella vermiformis; Legionella pneumophila; Negibacteria; Protozoa; Salmonella typhimurium ; Sarcodina; Typhimurium
GENE NUMBER: GENBANK AF157018 referred number

L138 ANSWER 20 OF 25 BIOTECHDS COPYRIGHT 2010 THOMSON REUTERS on STN
ACCESSION NUMBER: 1998-02067 BIOTECHDS Full-text
TITLE: Development of genetically defined avirulent salmonella vaccines; using Salmonella typhimurium deletion mutants (conference abstract)
AUTHOR: Sundaram P; Tinge S; Kaniga K; Curtiss III R
CORPORATE SOURCE: MEGAN-Health
LOCATION: MEGAN Health Inc., 3655 Vista, St.Louis, MO, USA.
SOURCE: Abstr.Gen.Meet.Am.Soc.Microbiol.; (1997) 97 Meet., 288
CODEN: 0005P
ISSN: 0067-2777
American Society for Microbiology, 97th General Meeting, Miami Beach, FL, 4-8 May, 1997.
DOCUMENT TYPE: Journal
LANGUAGE: English
ABSTRACT: Well-characterized, safe yet effective Salmonella vaccine strains were successfully and rapidly constructed. Defined deletions in the Salmonella typhimurium asd, cya, crp, phoP, phoQ, phoPQ and pmi genes were generated and cloned into a pir dependant replicon. These defined deletions were introduced into the chromosome of a wild-type S. typhimurium strain and either fusaric acid or sucrose counter selection was employed to recover mutants containing the replaced alleles. Strains with double mutations were constructed using combinations of the single mutations and characterized for the expected mutant phenotype. The cya crp, pmi crp, phoP, phoQ, phoPQ and phoP pmi mutants were safe and immunogenic in BALB/c mice. (0 ref)
CLASSIFICATION: D PHARMACEUTICALS; D4 Vaccines; A GENETIC ENGINEERING AND FERMENTATION; A1 Nucleic Acid Technology
CONTROLLED TERMS: SALMONELLA TYPHIMURIUM RECOMBINANT VACCINE STRAIN PREP., CHARACTERIZATION BACTERIUM (VOL.17, NO.5)

L138 ANSWER 21 OF 25 SCISEARCH COPYRIGHT (c) 2010 The Thomson Corporation on STN
ACCESSION NUMBER: 1999:82016 SCISEARCH Full-text
THE GENUINE ARTICLE: 159PC
TITLE: Different fates of Legionella pneumophila pmi and mil mutants within macrophages and alveolar epithelial cells
AUTHOR: Abu Kwaik Y (Reprint)
CORPORATE SOURCE: Univ Kentucky, Albert B Chandler Med Ctr, Dept Microbiol & Immunol, Lexington, KY 40536 USA (Reprint)
AUTHOR: Gao L Y; Stone B J; Brieland J K
CORPORATE SOURCE: Univ Michigan, Unit Lab Anim Med, Ann Arbor, MI 48109 USA
COUNTRY OF AUTHOR: USA
SOURCE: MICROBIAL PATHOGENESIS, (DEC 1998) Vol. 25, No. 6, pp. 291-306.

ISSN: 0882-4010.
PUBLISHER: ACADEMIC PRESS LTD, 24-28 OVAL RD, LONDON NW1 7DX, ENGLAND
.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 50
ENTRY DATE: Entered STN: 1999
Last Updated on STN: 1999

ABSTRACT:
Alveolar epithelial cells, which constitute the majority of the alveolar surface, may represent a potential niche for intracellular replication of Legionella pneumophila that has been largely overlooked. We examined the phenotypes of a bank of 121 macrophage-defective mutants of L. pneumophila (designated as pmi and mil) for their cytopathogenicity to and intracellular survival and replication within human alveolar epithelial cells. Our data showed that 91 of 121 mutants that were defective (modest-severe) in macrophages exhibited wild type-like phenotypes in human type I alveolar epithelial cells. In contrast, the other 30 mutants were defective in both macrophages and alveolar epithelial cells. Transmission electron microscopy of the intracellular infection by three ***mutants*** showed that the defect in intracellular replication in macrophages and epithelial cells was associated with a defect in recruitment of the RER around the phagosome. Differences in attachment to macrophages and epithelial cells were also exhibited by some of the mutants. Pulmonary infection studies of A/J mice showed that a mutant defective in macrophages but not in alveolar epithelial cells replicated like the wild type strain in the lungs of A/J mice. In contrast, a mutant defective in both macrophages and alveolar epithelial cells failed to replicate and was killed. We conclude that certain distinct genetic loci of L. pneumophila are uniquely required for intracellular survival and replication within phagocytic but not epithelial cells, which may be important in vivo. (C) 1998 Academic Press.

CATEGORY: IMMUNOLOGY; MICROBIOLOGY
SUPPLEMENTARY TERM: intracellular; bacteria; macrophage; epithelial; pathogenesis; Legionnaires
SUPPL. TERM PLUS: LEGIONNAIRES-DISEASE BACTERIUM; SALMONELLA-TYPHIMURIUM; INTRACELLULAR INFECTION; PERITONEAL-MACROPHAGES; HUMAN-MONOCYTES; PHOP-PHOQ; A/J MICE; VIRULENCE; GROWTH; INVASION

REFERENCE(S):

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	ARN PG (RPG)	Referenced Work (RWK)
ABUKWAIK Y	1998	66	203	INFECT IMMUN
ABUKWAIK Y	1993	61	1320	INFECT IMMUN
ABUKWAIK Y	1994	13	243	MOL MICROBIOL
ABUKWAIK Y	1996	21	543	MOL MICROBIOL
ABUKWAIK Y	1997	24	629	MOL MICROBIOL
ALPUCHEARANDA C M	1992	89	10079	P NATL ACAD SCI USA
ARATA S	1993	61	5056	INFECT IMMUN
BEHLAU I	1993	175	4475	J BACTERIOL
BERGER K H	1993	7	7	MOL MICROBIOL
BLANCHARD D K	1988	56	1187	INFECT IMMUN
BREIMAN R F	1990	161	1257	J INFECT DIS
BRIELAND J	1994	145	1537	AM J PATHOL
CARPO J D	1982	125	740	AM REV RESPIR DIS
CIANCIOTTO N P	1990	162	121	J INFECT DIS
CIANCIOTTO N P	1989	57	1255	INFECT IMMUN
CIANCIOTTO N P	1992	89	5188	P NATL ACAD SCI USA
CIANCIOTTO N P	1995	30	247	CURR MICROBIOL

FIELDS B S	1996	4	286	TRENDS MICROBIOL
FUJIO H	1992	89	183	FEMS MICROBIOL IMMUN
GAO L Y	1998	66	883	INFECT IMMUN
GAO L Y	1997	65	4738	INFECT IMMUN
GARCIADELPORTILLO F	1995	129	81	J CELL BIOL
RODGERS F G	1993	39	718	CAN J MICROBIOL
HARB O S	1998	64	126	APPL ENVIRON MICROB
HORWITZ M A	1983	158	1319	J EXP MED
HORWITZ M A	1983	158	2108	J EXP MED
HUSMANN L K	1992	60	5212	INFECT IMMUN
KWAIK Y A	1996	62	2022	APPL ENVIRON MICROB
KWAIK Y A	1994	62	1860	INFECT IMMUN
MARRA A	1992	89	9607	P NATL ACAD SCI USA
MILLER S I	1989	86	5054	P NATL ACAD SCI USA
MILLER S I	1990	172	2485	J BACTERIOL
MILLER V L	1992	60	3763	INFECT IMMUN
MILLER S I	1991	5	2073	MOL MICROBIOL
MODY C H	1993	167	1138	J INFECT DIS
NASH T W	1984	74	771	J CLIN INVEST
OH Y K	1996	64	3877	INFECT IMMUN
PAYNE N R	1987	166	1377	J EXP MED
ROY C R	1998	28	663	MOL MICROBIOL
SAMBROOK J	1989			MOL CLONING LAB MANU
SEGAL G	1998	95	1669	P NATL ACAD SCI USA
STONE B J	1998	66	1768	INFECT IMMUN
SUSA M	1996	64	1679	INFECT IMMUN
SUSA M	1998	160	316	J IMMUNOL
VENKATARAMAN C	1997	186	537	J EXP MED
VESCOVI E G	1996	84	165	CELL
VOGEL J P	1998	279	873	SCIENCE
WINN W C	1981	12	401	HUM PATHOL
WINTERMEYER E	1995	63	4576	INFECT IMMUN
YAMAMOTO Y	1988	56	370	INFECT IMMUN

L138 ANSWER 22 OF 25 EMBASE COPYRIGHT (c) 2010 Elsevier B.V. All rights reserved on STN DUPLICATE 5

ACCESSION NUMBER: 1999298518 EMBASE Full-text

TITLE: Attenuation and immunogenicity of Δcya Δcrp derivatives of Salmonella choleraesuis in pigs.

AUTHOR: Kennedy, Michael J. (correspondence); Yancey Jr., Robert J.; Sanchez, Margaret S.; Rzepkowski, Robert A.

CORPORATE SOURCE: Animal Health Discovery Research, Vet. Infectious Diseases Section, Pharmacia and Upjohn, Inc., Kalamazoo, MI 49001, United States. Michael.J.Kennedy@am.pnu.com

AUTHOR: Kelly, Sandra M.

CORPORATE SOURCE: MEGAN Health, St. Louis, MO 63110, United States.

AUTHOR: Curtiss III, Roy

CORPORATE SOURCE: Washington University, St. Louis, MO 63130, United States.

AUTHOR: Kennedy, Michael J. (correspondence)

CORPORATE SOURCE: Animal Health Discovery Research, Vet. Infectious Diseases Section, Pharmacia and Upjohn, Inc., 7000 Portage Rd., Kalamazoo, MI 49001, United States. Michael.J.Kennedy@am.pnu.com

AUTHOR: Yancey Jr., Robert J.

CORPORATE SOURCE: Central Research Division, Pfizer Inc., Groton, CT 06340, United States.

AUTHOR: Kennedy, Michael J. (correspondence)

CORPORATE SOURCE: Animal Health Discovery Research, Veterinary Infect. Diseases Section, Pharmacia and Upjohn, Inc., 7000 Portage Rd., Kalamazoo, MI 49001, United States. Michael.J.Kennedy@

am.pnu.com
SOURCE: Infection and Immunity, (1999) Vol. 67, No. 9, pp. 4628-4636.
Refs: 47
ISSN: 0019-9567 CODEN: INFIBR
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 026 Immunology, Serology and Transplantation
004 Microbiology: Bacteriology, Mycology, Parasitology and Virology
LANGUAGE: English
SUMMARY LANGUAGE: English
ENTRY DATE: Entered STN: 10 Sep 1999
Last Updated on STN: 10 Sep 1999

ABSTRACT: Six different isogenic Δcya Δcrp derivatives of a strain of Salmonella choleraesuis var. kunzendorf-χ3246 virulent for pigs were constructed by transposon-mediated deletion mutagenesis. These strains were evaluated for virulence and ability to elicit a protective immune response in young weaned pigs after oral administration and were compared to a commercially available vaccine which lacks the 50-kb virulence plasmid (vpl-). These derivatives were Δcya Δcrp vpl+, Δcya Δcrp vpl-, Δcya Δ(crp-cdt) vpl+, Δcya Δ(crp-cdt) vpl-, Δcya Δcrp pmi3834 vpl+, and Δcya Δ(crp-cdt) pmi-3834. In experiments to evaluate safety, no significant adverse effects of any of the vaccine constructs were observed, except that two of the strains which carried the virulence plasmid (vpl+) caused a small, short-term elevation in maximum temperature compared to pretreatment temperature values. Orally immunized animals, except for those vaccinated with the Δcya Δcrp pmi -3834 vpl+ strain or SC-54, developed significant serum antibody responses 21 days postvaccination as measured by enzyme-linked immunosorbent assay. No cell- mediated immune responses to heat-killed S. choleraesuis were noted at the same time point as measured with heat-killed bacteria as antigen in a lymphocyte proliferation assay. In an oral challenge exposure model with a highly virulent heterologous strain of S. choleraesuis, the Δcya Δcrp strains with deletions in pmi were not protective. As measured by morbidity scores, the responses to challenge of the pigs vaccinated with the other four Δcya Δcrp derivatives were significantly better than those of the nonvaccinated, challenged group. With the exception of temperature elevation and slight differences in diarrhea scores postchallenge, none of these strains differed significantly from each other in the other clinical parameters analyzed. While the commercial vaccine was protective by most of the parameters measured, it was not fully protective against challenge with virulent S. choleraesuis as judged by diarrhea scores and temperature elevation. Collectively, these data demonstrate that Δcya Δcrp derivatives, with or without the virulence plasmid but not with deletions in the pmi gene, are candidates for vaccines for protection against salmonellosis in pigs.

CONTROLLED TERM: Medical Descriptors:
animal cell
animal experiment
animal model
antibody response
article
*bacterial virulence
cellular immunity
immunogenicity
lymphocyte proliferation

nonhuman
priority journal
*salmonella cholera&suis
*salmonellosis
scoring system
swine
CONTROLLED TERM: Drug Descriptors:
*bacterial vaccine

L138 ANSWER 23 OF 25 EMBASE COPYRIGHT (c) 2010 Elsevier B.V. All rights reserved on STN
ACCESSION NUMBER: 1998319908 EMBASE Full-text
TITLE: Synthesis of the A-band polysaccharide sugar D-rhamnose requires Rmd and WbpW: Identification of multiple AlgA homologues, WbpW and ORF488, in Pseudomonas aeruginosa.
AUTHOR: Rocchetta, Heather L.; Pacan, Jennifer C.; Lam, Joseph S. (correspondence)
CORPORATE SOURCE: Department of Microbiology, Canadian Bacterial Diseases Network, University of Guelph, Guelph, Ont. N1G 2W1, Canada. jlam@uoguelph.ca
SOURCE: Molecular Microbiology, (1998) Vol. 29, No. 6, pp. 1419-1434.
Refs: 60
ISSN: 0950-382X CODEN: MOMIEE
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology: Bacteriology, Mycology, Parasitology and Virology
LANGUAGE: English
SUMMARY LANGUAGE: English
ENTRY DATE: Entered STN: 15 Oct 1998
Last Updated on STN: 15 Oct 1998

ABSTRACT: Pseudomonas aeruginosa is capable of producing various cell-surface polysaccharides including alginate, A-band and B-band lipopolysaccharides (LPS). The D-mannuronic acid residues of alginate and the D-rhamnose (D-Rha) residues of A-band polysaccharide are both derived from the common sugar nucleotide precursor GDP-D-mannose (D-Man). Three genes, rmd, gmd and wbpW, which encode proteins involved in the synthesis of GDP-D-Rha, have been localized to the 5' end of the A-band gene cluster. In this study, WbpW was found to be homologous to phosphomannose isomerases (PMIs) and GDP-mannose pyrophosphorylases (GMPs) involved in GDP-D-Man biosynthesis. To confirm the enzymatic activity of WbpW, Escherichia coli PMI and GMP mutants deficient in the K30 capsule were complemented with wbpW, and restoration of K30 capsule production was observed. This indicates that WbpW, like AlgA, is a bifunctional enzyme that possesses both PMI and GMP activities for the synthesis of GDP-D-Man. No gene encoding a phosphomannose mutase (PMM) enzyme could be identified within the A-band gene cluster. This suggests that the PMM activity of AlgC may be essential for synthesis of the precursor pool of GDP-D-Man, which is converted to GDP-D-Rha for A-band synthesis. Gmd, a previously reported A-band enzyme, and Rmd are predicted to perform the two-step conversion of GDP-D-Man to GDP-D-Rha. Chromosomal mutants were generated in both rmd and wbpW. The Rmd mutants do not produce A-band LPS, while the WbpW mutants synthesize very low amounts of A band after 18 h of growth. The latter observation was thought to result from the presence of the functional homologue AlgA, which may compensate for the WbpW deficiency in these mutants. Thus, WbpW Alga double mutants were constructed. These mutants also produced low levels of A-band LPS. A search of the PAO1 genome sequence identified a second Alga homologue, designated ORF488, which may be responsible for the synthesis of GDP-D-Man in the absence of WbpW and AlgA. Polymerase chain reaction (PCR) amplification and sequence analysis of this region reveals three

open reading frames (ORFs), orf477, orf488 and orf303, arranged as an operon. ORF477 is homologous to initiating enzymes that transfer glucose 1-phosphate onto undecaprenol phosphate (Und-P), while ORF303 is homologous to L-rhamnosyltransferases involved in polysaccharide assembly. Chromosomal mapping using pulsed field gel electrophoresis (PFGE) and Southern hybridization places orf477, orf488 and orf303 between 0.3 and 0.9 min on the 75 min map of PAO1, giving it a map location distinct from that of previously described polysaccharide genes. This region may represent a unique locus within P. aeruginosa responsible for the synthesis of another polysaccharide molecule.

CONTROLLED TERM: Medical Descriptors:
article
*bacterial cell wall
*bacterial virulence
chromosome map
chromosome mutation
cystic fibrosis: ET, etiology
enzyme activity
gene cluster
nonhuman
*nucleotide sequence
open reading frame
operon
priority journal
protein expression
*Pseudomonas aeruginosa
restriction mapping
Salmonella enterica
sequence analysis
sequence homology
structure analysis

CONTROLLED TERM: Drug Descriptors:
*alginic acid: EC, endogenous compound
bacterial enzyme: EC, endogenous compound
*bacterial polysaccharide: EC, endogenous compound
*bacterium lipopolysaccharide: EC, endogenous compound
cell surface marker: EC, endogenous compound
gene product: EC, endogenous compound
mannose 1 phosphate guanylyltransferase: EC, endogenous compound
mannose phosphate isomerase: EC, endogenous compound
O antigen: EC, endogenous compound
phosphomannomutase: EC, endogenous compound
*rhamnose: EC, endogenous compound
RNA precursor: EC, endogenous compound
unclassified drug
virulence factor: EC, endogenous compound

CAS REGISTRY NO.: (alginic acid) 28961-37-7, 29894-36-8, 9005-32-7, 9005-38-3; (mannose phosphate isomerase) 9023-88-5; (phosphomannomutase) 59536-73-1; (rhamnose) 10485-94-6, 3615-41-6

GENE NUMBER: GENBANK AF009955 submitted number; GENBANK AF009956 submitted number; GENBANK AF053937 submitted number

L138 ANSWER 24 OF 25 EMBASE COPYRIGHT (c) 2010 Elsevier B.V. All rights reserved on STN

ACCESSION NUMBER: 1975094782 EMBASE Full-text

TITLE: Relation of lipopolysaccharide character to P1 sensitivity

in Salmonella typhimurium.
AUTHOR: Ornellas, E.P.; Stocker, B.A.D.
CORPORATE SOURCE: Dept. Med. Microbiol., Stanford Univ. Sch. Med., Stanford, Calif. 94305, United States.
SOURCE: Virology, (1974) Vol. 60, No. 2, pp. 491-502. ISSN: 0042-6822 CODEN: VIRLAX
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 029 Clinical and Experimental Biochemistry
003 Endocrinology
004 Microbiology: Bacteriology, Mycology, Parasitology and Virology
LANGUAGE: English
ABSTRACT: Phage P1clr (a variant of P1kc), grown on an LT2 derivative so as to be appropriately modified, was tested for ability to produce plaques on numerous Salmonella typhimurium strains of different lipopolysaccharide (LPS) character: the rate of irreversible adsorption of P1clr by representative strains was measured. It appeared that the P1-resistance of wild type (i.e. smooth) S.typhimurium (and of some classes of rough mutant) results from failure to adsorb the phage. P1clr plated efficiency only on the 4 LPS classes which are sensitive to phage C21 and make either galactose deficient (classes galE and rfaH) or glucose deficient incomplete core LPS (classes rfaG and galU). Rates of adsorption ≥ 40 x 10-11/bacterium/min. were observed only for bacteria unable to make UDPgalactose, either by point mutation at galE or by deletion of the gal operon. A low, variable e.o.p. (usually 10-5 to 10-6) was obtained on mutants making complete core LPS, either without O chains (classes rfb, pmi, and rfaL) or with only single O units (class rfc), and on mutants deficient in addition of the distal heptose unit of the core (class rfaF). Phage P1clr had no detectable effect on smooth strains or mutants with various other LPS core defects. Phage P1cm had the same host range, except that it plated efficiently on some strains on which P1clr plated with low and variable efficiency; it converted some P1-sensitive strains to chloramphenicol resistance, but the number of resistant colonies obtained was always less than the number of plaques produced. Phage P1clr grown on E. coli K12 plated efficiently on galE, etc., derivatives of an LT2 line made restriction negative by mutations at hspLT and hspS, but did not plate (e.o.p. < 10-3) on LT2 galE wild type for restriction.

CONTROLLED TERM: Medical Descriptors:
*bacteriophage
*biochemistry
*escherichia coli
microorganism
*salmonella typhimurium
CONTROLLED TERM: Drug Descriptors:
*chloramphenicol
*galactose
*glucose
*lipopolysaccharide
CAS REGISTRY NO.: (chloramphenicol) 134-90-7, 2787-09-9, 56-75-7; (galactose) 26566-61-0, 50855-33-9, 59-23-4; (glucose) 50-99-7, 84778-64-3

L138 ANSWER 25 OF 25 EMBASE COPYRIGHT (c) 2010 Elsevier B.V. All rights reserved on STN
ACCESSION NUMBER: 0048099719 EMBASE Full-text
TITLE: Haptenic O antigen as a polymeric intermediate of in vivo synthesis of lipopolysaccharide by Salmonella typhimurium.
AUTHOR: Kent, J.L. (correspondence); Osborn, M.J.
CORPORATE SOURCE: Dept. of Mol. Biol., Albert Einstein Coll. of Med., Bronx, NY 10461, United States.

SOURCE: Biochemist, (1968) Vol. 7, No. 12, pp. 4419-4422.
ISSN: 0954-982X
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: CLASSIC
LANGUAGE: English
SUMMARY LANGUAGE: English
ENTRY DATE: Entered STN: Jun 2010
Last Updated on STN: Jun 2010

ABSTRACT: A mutant strain of S. typhimurium deficient in phosphomannose isomerase was used to study the kinetics of O antigen synthesis in vivo, these polysaccharides being the sole end products of 14C mannose incorporation. The kinetics of uptake of radioactivity into haptenic O antigen and lipopolysaccharide were consistent with the prediction of an intermediate with high turnover rate. Pulse chase studies demonstrated rapid and efficient transfer of O antigenic radioactivity from antigen carrier lipid hapten to lipopolysaccharide; at least 80% of the label transferred to lipopolysaccharide during the initial chase period was derived from hapten. The addition of completed O antigenic polymer to the preformed lipopolysaccharide acceptor represents a unique biochemical reaction whereby two different polymers are covalently joined.

CONTROLLED TERM: Medical Descriptors:
kinetics
mutant
*polymerization
prediction
pulse rate
radioactivity
*Salmonella typhimurium
*synthesis
turnover time
CONTROLLED TERM: Drug Descriptors:
antigen
hapten
lipid
*lipopolysaccharide
mannose
mannose phosphate isomerase
*O antigen
polymer
polysaccharide
CAS REGISTRY NO.: CAS Supplied: (MANNOSE PHOSPHATE ISOMERASE) 9023-88-5; (MANNOSE) 3458-28-4Q, 31103-86-3Q

FILE 'HOME' ENTERED AT 10:27:40 ON 30 NOV 2010

SEARCH HISTORY

```
=> d his nofile

     (FILE 'HOME' ENTERED AT 08:51:48 ON 30 NOV 2010)

     FILE 'CAPLUS' ENTERED AT 08:52:04 ON 30 NOV 2010
                E US2004-511616/APPS
                E US2005-511616/APPS
L1            1 SEA SPE=ON  ABB=ON  US2005-511616/AP
                D SCA
                D AB
                E CURTISS R/AU
L2          252 SEA SPE=ON  ABB=ON  CURTISS R/AU OR CURTISS R III/AU OR
                CURTISS RAY III/AU OR CURTISS ROY?/AU
L3        37998 SEA SPE=ON  ABB=ON  SALMONELLA/CW
                E ARACP/BI
L4            3 SEA SPE=ON  ABB=ON  ((ARACP OR ARA CP)(W)BAD OR ARACPBAD OR
                ARA CPBAD)/BI
L5          708 SEA SPE=ON  ABB=ON  GENE#/OBI(L)FUR/OBI OR (FUR GENE#)/BI
                D SCA L4
L6           43 SEA SPE=ON  ABB=ON  L5 AND L3
L7        51696 SEA SPE=ON  ABB=ON  ATTENUAT?/OBI
L8           10 SEA SPE=ON  ABB=ON  L3 AND L5 AND L7
                E LIPOPOLYSACCHARIDE/CT
                E E3+ALL
L9        38618 SEA SPE=ON  ABB=ON  LIPOPOLYSACCHARIDES/CT
L10           2 SEA SPE=ON  ABB=ON  L9 AND L6
                D SCA
L11         524 SEA SPE=ON  ABB=ON  L9(L)SYNTHES?/OBI
L12           1 SEA SPE=ON  ABB=ON  L11 AND L3 AND L5
L13        4541 SEA SPE=ON  ABB=ON  O/OBI(L)ANTIGEN#/OBI
L14         238 SEA SPE=ON  ABB=ON  L13 AND L3 AND L9
                E O ANTIGEN+ALL/CT
L15        3376 SEA SPE=ON  ABB=ON  O/OBI(L)ANTIGEN#/CW
L16         214 SEA SPE=ON  ABB=ON  L15 AND L3 AND L9
L17           0 SEA SPE=ON  ABB=ON  L15 AND L3 AND L9 AND (L4 OR L5)
L18           2 SEA SPE=ON  ABB=ON  L15 AND L3 AND (L4 OR L5)
L19           3 SEA SPE=ON  ABB=ON  L11 AND L15 AND L3
L20          12 SEA SPE=ON  ABB=ON  L3 AND L7 AND L15
L21           6 SEA SPE=ON  ABB=ON  L3 AND L7 AND L15 AND L9
L22         970 SEA SPE=ON  ABB=ON  PMI/BI
L23           3 SEA SPE=ON  ABB=ON  PFUR/BI
L24           0 SEA SPE=ON  ABB=ON  TTARACP?/BI
                D SCA L23 TI
L25          16 SEA SPE=ON  ABB=ON  L22 AND L3
L26           1 SEA SPE=ON  ABB=ON  Δ/BI(W)L22
                D SCA
                E ΔPMI/BI
L27           1 SEA SPE=ON  ABB=ON  ΔPMI/BI
                D SCA
L28      328337 SEA SPE=ON  ABB=ON  MUTAT?/OBI OR MUTANT#/OBI
L29       18181 SEA SPE=ON  ABB=ON  L3(L)TYPHIMURIUM/OBI
L30          12 SEA SPE=ON  ABB=ON  L22 AND L28 AND L3
L31          10 SEA SPE=ON  ABB=ON  L22 AND L28 AND L29
                D QUE
L32           9 SEA SPE=ON  ABB=ON  L22 AND L28 AND L29 AND L7
L33           1 SEA SPE=ON  ABB=ON  L31 NOT L32
                D SCA
```

```
L34          68 SEA SPE=ON  ABB=ON  L2 AND L3 AND (L4 OR L5 OR L7 OR L9 OR L15
                OR L22 OR L23 OR L28)
L35          12 SEA SPE=ON  ABB=ON  L2 AND (L4 OR L8 OR L12 OR L18 OR L19 OR
                L21 OR L23 OR L33)

     FILE 'MEDLINE' ENTERED AT 09:10:49 ON 30 NOV 2010
                E CURTIIS R/AU
L36         248 SEA SPE=ON  ABB=ON  CURTISS R?/AU,AUTH
                E CURTISS R/AU
L37       48420 SEA SPE=ON  ABB=ON  SALMONELLA+NT/CT
L38           1 SEA SPE=ON  ABB=ON  ((ARACP OR ARA CP)(W)BAD OR ARACPBAD OR
                ARA CPBAD)
                D SCA
L39        2584 SEA SPE=ON  ABB=ON  O ANTIGENS/CT
L40        7659 SEA SPE=ON  ABB=ON  VACCINES, ATTENUATED/CT
L41      491950 SEA SPE=ON  ABB=ON  MUTATION+NT/CT
L42       11848 SEA SPE=ON  ABB=ON  MUTANT PROTEINS+NT/CT
L43         154 SEA SPE=ON  ABB=ON  FUR GENE#
                D TRIAL 1 50 100 150
L44         958 SEA SPE=ON  ABB=ON  PMI OR ΔPMI
L45           2 SEA SPE=ON  ABB=ON  PFUR
L46           0 SEA SPE=ON  ABB=ON  TTARACP?
L47           5 SEA SPE=ON  ABB=ON  L43 AND L37
L48         171 SEA SPE=ON  ABB=ON  L39(L)BI/CT
L49           0 SEA SPE=ON  ABB=ON  L48 AND L43
L50           0 SEA SPE=ON  ABB=ON  L39 AND L43
L51           5 SEA SPE=ON  ABB=ON  L37 AND L43
                D SCA
L52         490 SEA SPE=ON  ABB=ON  FERRIC UPTAKE REGULATING PROTEINS,
                BACTERIAL/CN
L53          27 SEA SPE=ON  ABB=ON  L52 AND L37
L54           0 SEA SPE=ON  ABB=ON  L53 AND L39
L55           1 SEA SPE=ON  ABB=ON  L52 AND L37 AND L40
L56       20666 SEA SPE=ON  ABB=ON  BACTERIAL OUTER MEMBRANE PROTEINS+NT/CT
L57           1 SEA SPE=ON  ABB=ON  L52 AND L37 AND L56
L58           7 SEA SPE=ON  ABB=ON  L44 AND L37
                D SCA
L59         262 SEA SPE=ON  ABB=ON  MANNOSE-6-PHOSPHATE ISOMERASE/CT
L60           1 SEA SPE=ON  ABB=ON  L59 AND L37 AND (L40 OR L41 OR L42)
L61           5 SEA SPE=ON  ABB=ON  L59 AND L37
L62           3 SEA SPE=ON  ABB=ON  L44 AND L37 AND (L40 OR L41 OR L42)
L63       22571 SEA SPE=ON  ABB=ON  SALMONELLA TYPHIMURIUM/CT
L64           4 SEA SPE=ON  ABB=ON  L63 AND L44
L65          67 SEA SPE=ON  ABB=ON  L36 AND L37 AND (L38 OR L39 OR L40 OR L41
                OR L42 OR L43 OR L44 OR L45 OR L52 OR L56 OR L59)
L66           5 SEA SPE=ON  ABB=ON  L36 AND L37 AND (L40 OR L41 OR L42) AND
                (L38 OR L39 OR L43 OR L44 OR L45 OR L52 OR L56 OR L59)

     FILE 'EMBASE' ENTERED AT 09:30:55 ON 30 NOV 2010
                E CURTISS R/AU
L67          19 SEA SPE=ON  ABB=ON  CURTISS R?/AU
L68       67092 SEA SPE=ON  ABB=ON  SALMONELLA+NT/CT
L69       25567 SEA SPE=ON  ABB=ON  SALMONELLA TYPHIMURIUM/CT
                E FERRIC UPTAKE/CT
L70         367 SEA SPE=ON  ABB=ON  FERRIC UPTAKE REGULAT?
L71         190 SEA SPE=ON  ABB=ON  FUR GENE#
                D TRIAL 1 50 100 190
L72          41 SEA SPE=ON  ABB=ON  FUR GENE/CT
                E MANNOSE-6-PHOSPHATE ISOMERASE/CT
                E E3+ALL
```

```
L73         325 SEA SPE=ON  ABB=ON  MANNOSE PHOSPHATE ISOMERASE/CT
                E PHOSPHATE MANNOSE IS/CT
                E O ANTIGENS+ALL/CT
L74        2711 SEA SPE=ON  ABB=ON  O ANTIGEN/CT
L75        1095 SEA SPE=ON  ABB=ON  PMI OR ΔPMI OR DELTAPMI
L76           4 SEA SPE=ON  ABB=ON  PFUR
L77           3 SEA SPE=ON  ABB=ON  TTARA?
                E ATTENUATE/CT
                E VACCINES, ATTENUATED+ALL/CT
                E E2+ALL
L78       11332 SEA SPE=ON  ABB=ON  LIVE VACCINE/CT
L79      189362 SEA SPE=ON  ABB=ON  ATTENUAT?
                E DELTAPFUR
                E MUTATION+ALL/CT
L80      544225 SEA SPE=ON  ABB=ON  MUTATION+NT/CT
                E MUTANT/CT
                E E3+ALL
L81       48065 SEA SPE=ON  ABB=ON  MUTANT/CT OR BACTERIUM MUTANT+NT/CT
                E MUTANT PRO/CT
                E E9+ALL
L82       31722 SEA SPE=ON  ABB=ON  MUTANT PROTEIN/CT
L83          25 SEA SPE=ON  ABB=ON  PFUR?
L84           1 SEA SPE=ON  ABB=ON  ((ARACP OR ARA CP)(W)BAD OR ARACPBAD OR
                ARA CPBAD)
L85           7 SEA SPE=ON  ABB=ON  L68 AND L71
L86          10 SEA SPE=ON  ABB=ON  L68 AND L70 AND (L78 OR L79 OR L80 OR L81
                OR L82)
L87           1 SEA SPE=ON  ABB=ON  L68 AND L70 AND L74
L88           8 SEA SPE=ON  ABB=ON  L86 NOT (L85 OR L85 OR L87)
                D SCA
L89       11319 SEA SPE=ON  ABB=ON  REGULATOR GENE/CT
L90           1 SEA SPE=ON  ABB=ON  L86 AND L89
L91           0 SEA SPE=ON  ABB=ON  L77 AND L83
L92           0 SEA SPE=ON  ABB=ON  L68 AND (L77 OR L83)
                D SCA L77
                D SCA L76
L93           5 SEA SPE=ON  ABB=ON  L73 AND L68
L94           9 SEA SPE=ON  ABB=ON  L75 AND L68
L95           5 SEA SPE=ON  ABB=ON  L69 AND L75
L96           5 SEA SPE=ON  ABB=ON  L75 AND L68 AND (L78 OR L79 OR L80 OR L81
                OR L82)
L97           9 SEA SPE=ON  ABB=ON  L67 AND L68 AND (L70 OR L71 OR L72 OR L73
                OR L74 OR L75 OR L76 OR L77 OR L78 OR L79 OR L80 OR L81 OR L82
                OR L83 OR L84)

     FILE 'STNGUIDE' ENTERED AT 09:47:31 ON 30 NOV 2010

     FILE 'PASCAL, BIOTECHNO, WPIX, BIOSIS, DISSABS, LIFESCI, ESBIOBASE,
     BIOTECHDS, BIOENG, SCISEARCH' ENTERED AT 09:52:46 ON 30 NOV 2010
L98        1063 SEA SPE=ON  ABB=ON  CURTISS R/AU OR CURTISS R III/AU OR
                CURTISS ROY?/AU
L99      249856 SEA SPE=ON  ABB=ON  SALMONELLA
L100          8 SEA SPE=ON  ABB=ON  ((ARACP OR ARA CP)(W) BAD OR ARACPBAD OR
                ARA CPBAD)
L101       1088 SEA SPE=ON  ABB=ON  FUR GENE#
L102       1719 SEA SPE=ON  ABB=ON  FERRIC UPTAKE REGULAT?
L103      13365 SEA SPE=ON  ABB=ON  O(W) ANTIGEN#
L104    2667600 SEA SPE=ON  ABB=ON  MUTAT? OR MUTANT#
L105        965 SEA SPE=ON  ABB=ON  MANNOSE(1A) PHOSPHATE ISOMERASE
L106       5259 SEA SPE=ON  ABB=ON  PMI OR ΔPMI OR DELTAPMI
```

```
L107          83 SEA SPE=ON  ABB=ON  PFUR? OR DELTAPFUR?
L108           4 SEA SPE=ON  ABB=ON  TTARA?
L109      751214 SEA SPE=ON  ABB=ON  ATTENUAT?
L110     2667600 SEA SPE=ON  ABB=ON  MUTAT? OR MUTANT#
L111           8 SEA SPE=ON  ABB=ON  L99 AND L100
L112         173 SEA SPE=ON  ABB=ON  L99 AND (L101 OR L102)
L113           4 SEA SPE=ON  ABB=ON  L103 AND L112
L114         101 SEA SPE=ON  ABB=ON  L112 AND (L104 OR L109)
L115       89324 SEA SPE=ON  ABB=ON  OUTER MEMBRANE
L116           7 SEA SPE=ON  ABB=ON  L99 AND (L101 OR L102) AND (L104 OR L109)
                 AND L115
L117           0 SEA SPE=ON  ABB=ON  L107 AND L108
L118          48 SEA SPE=ON  ABB=ON  (L105 OR L106) AND L110 AND L99
L119          30 DUP REM L118 (18 DUPLICATES REMOVED)
                      ANSWERS '1-2' FROM FILE PASCAL
                      ANSWERS '3-4' FROM FILE BIOTECHNO
                      ANSWERS '5-16' FROM FILE WPIX
                      ANSWERS '17-19' FROM FILE BIOSIS
                      ANSWERS '20-21' FROM FILE DISSABS
                      ANSWERS '22-24' FROM FILE LIFESCI
                      ANSWERS '25-26' FROM FILE ESBIOBASE
                      ANSWERS '27-28' FROM FILE BIOTECHDS
                      ANSWERS '29-30' FROM FILE SCISEARCH
L120      100416 SEA SPE=ON  ABB=ON  L99(W) TYPHIMURIUM
L121          34 SEA SPE=ON  ABB=ON  (L105 OR L106) AND L110 AND L120
L122          22 DUP REM L121 (12 DUPLICATES REMOVED)
                      ANSWER '1' FROM FILE PASCAL
                      ANSWER '2' FROM FILE BIOTECHNO
                      ANSWERS '3-9' FROM FILE WPIX
                      ANSWERS '10-12' FROM FILE BIOSIS
                      ANSWER '13' FROM FILE DISSABS
                      ANSWERS '14-16' FROM FILE LIFESCI
                      ANSWERS '17-18' FROM FILE ESBIOBASE
                      ANSWERS '19-21' FROM FILE BIOTECHDS
                      ANSWER '22' FROM FILE SCISEARCH
                 D QUE
L123       13465 SEA SPE=ON  ABB=ON  L110(S)((L106 OR L105 OR L120))
L124          31 SEA SPE=ON  ABB=ON  L121 AND L123
L125          53 SEA SPE=ON  ABB=ON  L98 AND L99 AND (L104 OR L109) AND (L100
                 OR L101 OR L102 OR L103 OR L105 OR L106 OR L107 OR L108 OR
                 L115)
L126          29 SEA SPE=ON  ABB=ON  L98 AND L120 AND (L104 OR L109) AND (L100
                 OR L101 OR L102 OR L103 OR L105 OR L106 OR L107 OR L108 OR
                 L115)
L127          21 DUP REM L126 (8 DUPLICATES REMOVED)
                      ANSWERS '1-3' FROM FILE PASCAL
                      ANSWERS '4-7' FROM FILE WPIX
                      ANSWERS '8-18' FROM FILE BIOSIS
                      ANSWER '19' FROM FILE BIOTECHDS
                      ANSWERS '20-21' FROM FILE SCISEARCH

     FILE 'STNGUIDE' ENTERED AT 10:01:47 ON 30 NOV 2010

     FILE 'PASCAL, BIOTECHNO, WPIX, BIOSIS, DISSABS, LIFESCI, ESBIOBASE,
     BIOTECHDS, BIOENG, SCISEARCH' ENTERED AT 10:02:44 ON 30 NOV 2010
                 D QUE L126

     FILE 'CAPLUS' ENTERED AT 10:02:44 ON 30 NOV 2010
                 D QUE L35
```

```
     FILE 'MEDLINE' ENTERED AT 10:02:44 ON 30 NOV 2010
                D QUE L66

     FILE 'EMBASE' ENTERED AT 10:02:44 ON 30 NOV 2010
                D QUE L97

     FILE 'MEDLINE, CAPLUS, PASCAL, WPIX, BIOSIS, LIFESCI, BIOTECHDS,
     SCISEARCH, EMBASE' ENTERED AT 10:02:45 ON 30 NOV 2010
L128           39 DUP REM L66 L35 L126 L97 (16 DUPLICATES REMOVED)
                     ANSWERS '1-5' FROM FILE MEDLINE
                     ANSWERS '6-14' FROM FILE CAPLUS
                     ANSWER '15' FROM FILE PASCAL
                     ANSWER '16' FROM FILE WPIX
                     ANSWERS '17-27' FROM FILE BIOSIS
                     ANSWER '28' FROM FILE BIOTECHDS
                     ANSWERS '29-30' FROM FILE SCISEARCH
                     ANSWERS '31-39' FROM FILE EMBASE
                D IALL 1-5
                D IBIB ABS HITIND 6-14
                D IALL 15
                D IFULL 16
                D IALL 17-39

     FILE 'STNGUIDE' ENTERED AT 10:03:36 ON 30 NOV 2010

     FILE 'PASCAL, BIOTECHNO, WPIX, BIOSIS, DISSABS, LIFESCI, ESBIOBASE,
     BIOTECHDS, BIOENG, SCISEARCH' ENTERED AT 10:05:33 ON 30 NOV 2010
                D QUE L111
                D QUE L113
                D QUE L116
L129           12 SEA SPE=ON  ABB=ON  (L111 OR L113 OR L116) NOT L126

     FILE 'CAPLUS' ENTERED AT 10:05:37 ON 30 NOV 2010
                D QUE L4
                D QUE L8
                D QUE L12
                D QUE L18
                D QUE L19
                D QUE L21
L130           10 SEA SPE=ON  ABB=ON  (L4 OR L8 OR L12 OR L18 OR L19 OR L21) NOT
                  L35

     FILE 'EMBASE' ENTERED AT 10:05:39 ON 30 NOV 2010
                D QUE L84
                D QUE L85
                D QUE L87
                D QUE L90
L131           10 SEA SPE=ON  ABB=ON  (L84 OR L85 OR L87 OR L90) NOT L97

     FILE 'MEDLINE' ENTERED AT 10:05:41 ON 30 NOV 2010
                D QUE L38
                D QUE L47
                D QUE L50
                D QUE L54
                D QUE L55
                D QUE L57
L132            5 SEA SPE=ON  ABB=ON  (L38 OR L47 OR L55 OR L57) NOT L66

     FILE 'STNGUIDE' ENTERED AT 10:05:51 ON 30 NOV 2010
```

```
     FILE 'MEDLINE, CAPLUS, WPIX, BIOSIS, ESBIOBASE, BIOTECHDS, SCISEARCH,
     EMBASE' ENTERED AT 10:06:06 ON 30 NOV 2010
L133          27 DUP REM L132 L130 L129 L131 (10 DUPLICATES REMOVED)
                     ANSWERS '1-5' FROM FILE MEDLINE
                     ANSWERS '6-15' FROM FILE CAPLUS
                     ANSWER '16' FROM FILE WPIX
                     ANSWERS '17-19' FROM FILE BIOSIS
                     ANSWER '20' FROM FILE BIOTECHDS
                     ANSWERS '21-25' FROM FILE SCISEARCH
                     ANSWERS '26-27' FROM FILE EMBASE
                D IALL 1-5
                D IBIB ABS HITIND 6-15
                D IFULL 16
                D IALL 17-27

     FILE 'STNGUIDE' ENTERED AT 10:06:43 ON 30 NOV 2010

     FILE 'PASCAL, BIOTECHNO, WPIX, BIOSIS, DISSABS, LIFESCI, ESBIOBASE,
     BIOTECHDS, BIOENG, SCISEARCH' ENTERED AT 10:26:30 ON 30 NOV 2010
                D QUE L117
                D QUE L124
L134          21 SEA SPE=ON  ABB=ON  L124 NOT (L129 OR L126)

     FILE 'CAPLUS' ENTERED AT 10:26:35 ON 30 NOV 2010
                D QUE L24
                D QUE L23
                D QUE L33
L135           4 SEA SPE=ON  ABB=ON  (L23 OR L33) NOT (L130 OR L35)

     FILE 'EMBASE' ENTERED AT 10:26:36 ON 30 NOV 2010
                D QUE L91
                D QUE L92
                D QUE L93
                D QUE L95
                D QUE L96
L136          11 SEA SPE=ON  ABB=ON  (L93 OR L95 OR L96) NOT (L131 OR L97)

     FILE 'MEDLINE' ENTERED AT 10:26:38 ON 30 NOV 2010
                D QUE L46
                D QUE L45
                D QUE L61
                D QUE L62
                D QUE L64
L137          10 SEA SPE=ON  ABB=ON  (L45 OR L61 OR L62 OR L64) NOT (L132 OR
                   L66)

     FILE 'STNGUIDE' ENTERED AT 10:26:46 ON 30 NOV 2010

     FILE 'MEDLINE, CAPLUS, PASCAL, BIOTECHNO, WPIX, BIOSIS, DISSABS, LIFESCI,
     ESBIOBASE, BIOTECHDS, SCISEARCH, EMBASE' ENTERED AT 10:27:06 ON 30 NOV
     2010
L138          25 DUP REM L137 L135 L134 L136 (21 DUPLICATES REMOVED)
                     ANSWERS '1-10' FROM FILE MEDLINE
                     ANSWERS '11-12' FROM FILE CAPLUS
                     ANSWERS '13-15' FROM FILE WPIX
                     ANSWER '16' FROM FILE BIOSIS
                     ANSWER '17' FROM FILE DISSABS
                     ANSWER '18' FROM FILE LIFESCI
                     ANSWER '19' FROM FILE ESBIOBASE
                     ANSWER '20' FROM FILE BIOTECHDS
```

```
                    ANSWER '21' FROM FILE SCISEARCH
                    ANSWERS '22-25' FROM FILE EMBASE
               D IALL 1-10
               D IBIB ABS HITIND 11-12
               D IFULL 13-15
               D IALL 16-25

     FILE 'HOME' ENTERED AT 10:27:40 ON 30 NOV 2010

=>
```